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VETERINARY MEDICINE

AUGUST 1946

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7632 S. Crandon Ave.
Chicago 49, U.S.A.

for Greater Service TO THE PROFESSION

JENSEN-SALSBERY LABORATORIES, INC., of Kansas City, Missouri, announce their amalgamation with the Vick Chemical Company of New York.

With no change in management, personnel or policy, Jensen-Salsbery Laboratories will have access to the extensive research and production facilities of the other enterprises comprising the Vick Chemical Company. The affiliation will provide a continuing source for the antibiotics and biochemicals so important in modern veterinary practice.

Current expansion of facilities at Kansas City will likewise increase Jensen-Salsbery's ability to serve the profession in biological and other fields, with products which will, as always, be sold only to qualified veterinary practitioners.

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D. M. CAMPBELL, *Editor*
7632 S. Crandon Ave., Chicago 49, Ill.
Telephone South Shore 7160

H. J. MOSTYN, *Eastern Representative*
P. O. Box 121, Sussex, New Jersey
Telephone Sussex 2F18

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Systemic penicillin therapy cleared the urine of Leptospira within a few days in cases of Weils disease, according to Hart (*Brit. Med. J.* 2:720, 1945).

By replacing the chlorine in the DDT molecule with fluorine, its destructiveness to insects and cold blooded animals is increased greatly. For malaria control a larvacide that will kill "wigglers" without harming fish is much sought by research chemists and entomologists.

The production of penicillin can be doubled by exposing the spores of *Penicillium notatum* to ultraviolet light. In 1940 the yield obtained from the mold was two units per cc of broth culture. Research by the U. S. Department of Agriculture raised this production to 169 units. The Carnegie Institute stepped this up to 369 units per cc and now research at the University of Wisconsin on the effect of ultraviolet light on the mold spores has brought the yield of penicillin up to 761 units per cc of broth culture.

A patent has been issued to Selman Waksman of Rutgers University, famous for his research work on streptomycin, on a process by which citric acid is produced mainly by mold fermentation. Citric acid is used extensively in soft drinks, confectionery and medicine.

A certain species of aspergillus mold is used and the sugar solution upon which it is cultured is conditioned with salts of iron and zinc and the output is practically pure citric acid. Rights to this patent are assigned to Merck and Company.

The U. S. production of penicillin totaled more than 7,100,000,000,000 units in 1945 and will be much larger for 1946; the production at the present time being considerably greater than a trillion units per month.

"Q fever," a pneumonia-like disease first described in Australia has been taken out of the class of diseases of unknown origin and placed in the rickettsia group by researchers of the Army Medical Department. The evidence suggests that the disease is communicated mainly by inhalation.

A simple low-cost method by which the oil of fish livers can be secured has been patented. The livers are ground, acidified slightly and some pepsin added. The material is allowed to stand. After a few days the cell walls are broken down by the enzyme and the oil rises to the surface. This method can be used to extract fish oils in the tropics and remote places where transportation costs of the whole livers would be excessive.

Abel reported[1] three cases of tularemia, two of which were complicated by pneumonia and the third was associated with pregnancy. They were treated by the intramuscular injection of a million units of streptomycin every 24 hours for from two to eight days. All recovered. Because of the rapid improvement evidenced immediately after the use of streptomycin the author concludes it is a specific for tularemia.

[1]Abel Jr., O. Use of streptomycin in tularemia. *Mo. Med. Assn. J.* 43, p. 167. 1946.

St. Clair Joins Illinois Faculty

Dr. Lorenz E. St. Clair was appointed head of the Department of Veterinary Anatomy in the new College of Veterinary Medicine, University of Illinois, July 1, 1946.

Born at Colona, Ill., Doctor St. Clair received his veterinary degree at Colorado A. and M.

Lorenz E. St. Clair

and did graduate work in veterinary and human anatomy at Colorado and Minnesota universities. His Masters and Doctorate degrees were obtained at Iowa State college. At Colorado A. and M. he was assistant professor of veterinary anatomy from 1935 until 1937, and at Iowa State college he was professor of veterinary anatomy from 1937 until his appointment to the Univerity of Illinois faculty. Doctor St. Clair is a member of Phi Zeta, Alpha Psi, Gamma Sigma Delta and Sigma Xi.

1945 Hatch Sets All-Time Record

The 1945 output of baby chicks by commercial hatcheries totaled 1,620,773,000 chicks, establishing an all-time record for hatchings of chicks in one year, according to final hatchery estimates from the U. S. Bureau of Agricultural Economics. This exceeded the previous record output of 1943 by about 1%.—*Everybody's Poultry Magazine.*

New Anesthetic Related to Ether, But More Powerful

A new anesthetic related to ether but more powerful, less irritating and with less disagreeable after-effects has been developed by Dr. John C. Krantz, Jr., of the University of Maryland School of Medicine.

Metopryl is the name of the new anesthetic which, chemically, is n-propyl methyl ether. It is reported to give greater muscular relaxation and is good for long operations. It is said to have a pleasant odor.—*Sci. N. L.*

Fifty cases of tularemia occurred among soldiers in the Tennessee maneuver area in 1943. Thirty-two of these cases occurred within 21 days of a history of tick bite; five had a history of contact with rabbits. There was one fatality among the 50 cases. Most of the cases required hospitalization for three to six months.

The Good Fortune of Major Ozier

Major Terry S. Ozier, V.C., an emergency veterinary officer, received one of 10 Military awards given to veterinary officers recently; the other nine going to colonels in the Veterinary Corps of the Regular Army. That all 10 awards did not go to Regular Army personnel is quite incomprehensible to many. Various possible explanations of this unusual occurrence have been suggested; the latest being that the Surgeon General thought he was honoring a medical officer. This assumption is based on the fact that the word "medical" occurs three times in the citation and the word "veterinary" occurs not at all.

Equine Encephalomyelitis in 1945

In the final report for 1945 of the Chief of the Federal Bureau of Animal Industry on the occurrence of encephalomyelitis among horses and mules in the United States, it is shown that the disease occurred in 33 states in 1945 from which a total of 3,212 cases were reported. This is the smallest number reported since the Bureau began making national surveys of this disease 11 years ago.

The greatest number of cases (485) reported from any state occurred in Missouri. California with 402 cases; Nebraska, 294 cases; Oklahoma, 277 cases; Kansas, 259 cases, and Illinois from which 203 cases were reported, include all states experiencing more than 200 cases last year. These six states reported almost two-thirds of the total number reported.

Equine encephalomyelitis was reported for each month in the year; January 2, February 4, March 7, April 31, May 159, June 295, July 495, August 692, September 1027, October 408, November 63 and December 29. Thus in the preëpizootic period, January to April, there were 44 cases and in the postepizootic season, November-December, 92 cases.

The average mortality was 36%, the highest reported for any year. The number of animals vaccinated for the prevention of the disease is estimated to be 700,000. Of this number 34 (less than 0.005%) were reported to have died of the disease. The mortality among unvaccinated animals was seven times as high. This loss of vaccinated animals is an index of lax vaccination.

Army Veterinary Corps

Major Edward J. Watson, V.C., died April 6, 1946, at Fort Monmouth, New Jersey. He was born December 1, 1912, and graduated from Washington State College in 1937, from the Army Veterinary School in 1941 and from the Medical Field Service School in 1942.

Major Watson was on active duty with the CCC from August 18, 1937, to August 31, 1939, and July 15, 1940 early in the emergency, was ordered to active duty for a period of one year and assigned to the Presidio of Monterey, California. This active duty was continued on June 25, 1941.

February 25, 1942, he was appointed 1st Lieutenant, Veterinary Corps, Regular Army, and promoted to captain the same date and to Major Dec. 12, 1942. He was assigned to Headquarters, Fourth Air Force, San Francisco, California, March 15, 1942, going overseas in December of that year.

He returned from overseas in April, 1944, and entered Hammond General Hospital for observation and treatment, later being transferred to Dibble General Hospital. Upon discharge from the hospital, he was assigned to Lockbourne Army Air Base, Ohio, thence to Maxwell Field, Alabama, and was on duty at Fort Monmouth, New Jersey, at the time of his death.

Bronze Star Medal—Posthumous Awards

By direction of the President under the provisions of Executive Order 9419, 4 February 1944 (Sec. II, Bulletin 3, WD, 1944), a Bronze Star Medal is posthumously awarded by the Commander-in-Chief, United States Army Forces, Pacific, to the following-named officers and enlisted men for heroic achievement in connection with military operations against the enemy in Cabanatuan, Philippine Islands, during the period indicated.

.....

Major Wesley W. Bertz, 018307, Veterinary Corps, United States Army. For meritorious achievement in connection with military operations against the enemy in the Philippine Islands from 8 June 1942 to 14 October 1944. Serving with a hospital in Military Prison Camp No. 1, Cabanatuan, Philippine Islands, Major Bertz rendered outstanding service to his fellow soldiers over a prolonged period despite the most difficult conditions. During the first few months, the death rate assumed alarming proportions due to a diphtheria epidemic as well as frequent outbreaks of dysentery, malaria, beriberi and pneumonia, yet Major Bertz repeatedly exposed himself to the ravages of these diseases and by his unflinching loyalty to the patients prevented what might have become a wholesale decimation of American Prisoners of War. Handicapped by a completely inadequate medicinal supply and starvation rations, he worked untiringly and faithfully to curtail the physical and mental deterioration which was becoming apparent among the diseased prisoners. He courageously continued to carry out his assigned duties while suffering from hunger, illness and exhaustion. By his dauntless spirit of self-sacrifice, untiring devotion to duty and unwavering courage in the face of increasingly disheartening conditions, Major Bertz was instrumental in saving the lives of many comrades, and his unselfish service exemplified the highest traditions of the United States Army Medical Department.

By command of General MacArthur:

R. K. Sutherland, Lieut. Gen., U.S.A.
Chief of Staff

Citation for Legion of Merit

Major Walter A. Lawrence, V.C. For exceptionally meritorious conduct in the performance of outstanding services in the Africa-Middle East Theater from 1 November 1942 to 14 November 1945. As Veterinary Officer of this

Major W. A. Lawrence

theater, Major Lawrence inaugurated the veterinary service in the command and efficiently performed the duties of food inspector. Major Lawrence contributed immeasurably to the health of the military personnel by conducting and supervising frequent inspections of meat and dairy products procurement and succeeded in raising hygienic standards in certain local establishment to a point where satisfactory fresh eggs, poultry and sea foods were acceptable for use in routine Army menus. Major Lawrence's ingenuity and plan-

ning has led to better handling and storage of food supplies in this theater, which has reduced considerably the losses sustained by the Army in spoilage of meat and dairy products. During his tenure of duty Major Lawrence has demonstrated extraordinary energy and ability in organizing and directing the veterinary units and has contributed greatly to the welfare of the troops, thus reflecting great credit upon himself and the Armed Forces of the United States.

B. F. Giles,
Major General, U. S. Army
Commanding

Citation for the Legion of Merit

Lieutenant Colonel James R. Karr, 0297205, Veterinary Corps, Army of the United States. As Wing Veterinarian, South Atlantic Wing, Theater Veterinarian, South Atlantic Theater; and Chief, Veterinarian Branch, Medical Division, Office of the Surgeon, Headquarters, Air Transport Command, during the period from November 1942 to September 1945, Colonel Karr, by his resourcefulness, ingenuity, professional ability, determined effort and ability to organize was largely responsible for the high standard of nutrition, health and morale of the American personnel stationed in Brazil. His vast experience was instrumental in improving the quality and variety of the food supplied to Air Transport Command personnel scattered throughout all parts of the world.

Col. Todd Given Alumni Award

Col. Frank A. Todd, V.C., was honored at Alumni Day at the Iowa State College, June 15th, when he was given the Alumni Merit Award, sponsored annually by the Iowa State Alumni Club of Chicago.

The award is bestowed upon outstanding alumni for meritorious service in their special fields and their contributions to their fellow men.

Col. Todd, a native of Merrill, Iowa, was born on Sept. 11, 1911. He was graduated from Iowa State College with a degree of doctor of veterinary medicine in 1933. He completed his graduate work at Yale University in 1935 and was commissioned in the regular army at that time.

He went overseas in 1941 as veterinary officer for the Iceland Base Command and served there from Sept., 1941, to June, 1943. He was responsible for the establishment and maintenance of proper sanitary standards for the American Military personnel of that command.

While on the Iceland assignment, Col. Todd rendered great assistance to the government and peoples of Iceland in the fields of animal husbandry, farm conservation and research in connection with diseases of Iceland's domestic animals. Due to his efforts, relations between the Icelandic government and the people of the United States have been greatly enhanced. In recognition of his services, he was awarded the Legion of Merit medal by the United States government.

After serving in Iceland, he became a member of the European Civil Affairs Division. This appointment was in September of 1943. He served in England and later on the Continent.

Col. Todd was active at Iowa State College in student affairs. He was a member of Sigma Alpha Epsilon, social fraternity. He was also a member of the Iowa State Players and manager of the baseball team in 1933. In his division, he was a member of the Veterinary Medical Association, Iowa State College.

Veterinarians Prevented Epizootics in Wartime Army; Also Aided Troop Immunization Program

War Department authorities announced today that the Veterinary Corps guarded the health of Army animals so thoroughly, during World War II, that there was no epizootic among the many thousands of horses, mules, dogs and pigeons engaged in military operations. That achievement, made possible largely through the application of modern preventive veterinary medicine, including an effective program of immunization, stands unparalleled in the history of war.

On the heels of that announcement, military officials revealed that practically the same technics and the same expertly trained personnel used by the Veterinary Corps in making animal vaccines were utilized in perfecting and producing vaccines to protect American troops against typhus and two forms of encephalitis.

Because the Army Veterinary Laboratory at the Army Medical Center, Washington, D. C., was completely staffed and equipped for making biological products and, because of the outstanding work it had done in this line for many years, it was called upon to help develop certain vaccines for troop use. To this end, Army Veterinary Laboratory officers, headed by Colonel Raymond Randall, VC and working in conjunction with the staff of the Virus and Rickettsial Disease Laboratory of the Army Medical School, began experiments on August 14, 1942, to develop a method whereby a clear, concentrated vaccine for prevention of louse-borne typhus, could be produced in mass quantities at low cost. This

project in which they designed several important manufacturing procedures, was successfully completed November 18, 1942.

During the course of their research, the veterinary officers found that disintegration of infected egg yolk sacs could best be accomplished by shaking in a mechanical shaker in the presence of distilled water, followed by slow freezing of the resultant suspension in an electric cabinet maintained at 20° to 23°C. This method brought about more thorough disintegration of the yolk-sac cells and consequently greater liberation of Rickettsia than previous methods employed. They were able to produce a clear vaccine by extracting the entire yolk-sac suspension (a 10% suspension of infected yolk sac in yolk fluid and saline) with ether, and retaining the so-called yolk cream layer, which constitutes about one-fifth of the whole suspension. This layer was found to be rich in Rickettsia and its use increased markedly the yield and efficacy of the finished vaccine.

Embryo Inoculation

As early as 1941, when several thousand cases of equine encephalomyelitis occurred in the civilian population, The Surgeon General recognized the serious military potential of this disease and directed that attention be given to developing a method of prophylaxis. By May 29, 1944, the Army Veterinary Laboratory was producing equine encephalomyelitis vaccine of chick-embryo origin for human use according to a new technic of two-stage centrifugation. The vaccine contained only about one-tenth of the inert material found in the crude horse vaccine. The laboratory now keeps about 18,000 doses on hand, enough to inoculate exposed persons wherever the disease might occur.

February 11, 1946, this laboratory was assigned the project of mass production of Japanese B encephalitis vaccine, of chick-embryo type, for use by the Army of Occupation in Japan. Production methods, practically the same as those used for equine encephalomyelitis vaccine except for the time and temperature of incubation of the infected embryonated eggs, have been developed and appear to be the solution to problems encountered in manufacture. Current objective is to produce 1,500,000cc—enough to vaccinate well over 350,000 persons.

The Army Veterinary Laboratory does not test the Japanese B encephalitis vaccine produced for troop use. That work is done in the Division of Virus and Rickettsial Disease of the Army Medical School.

Plans to Avoid Veterinary Concentration

Steps to counteract the growing concentration of graduate veterinarians in the areas surrounding 10 U. S. colleges of veterinary medicine were inaugurated by the appointment of Dr. J. L. Morrill, president of the University of Minnesota, as chairman of a sub-committee to study the problem of providing training in veterinary medicine for young men in states having no veterinary colleges.

Doctor Morrill represents one of the land grant colleges where there is no veterinary college. Other members of the committee are Dr. C. R. Donham, chief of the division of veterinary science, Purdue University, and Dr. R. S. Sugg, dean of the School of Veterinary Medicine, Alabama Polytechnic Institute, with Dean Walter R. Krill, College of Veterinary Medicine, Ohio State University, chairman of the committee on the training of veterinarians of National Research Council, an ex-officio member.

In announcing the new committee, Dean Krill said: "With the marked increase in demand for veterinary education prior to and especially since the war, most of the 10 veterinary colleges, being tax-supported have confined their admissions largely to their own states. Should this continue, it will lead to a concentration of veterinarians in some areas and entirely inadequate service in other areas.

"The problem of livestock disease control and eradication for the protection of one of the chief food sources of this country demands adequate veterinary service in every community, to insure the early diagnosis of disease and the instigation of control measures."

AIR STAFF VETERINARIAN'S CONFERENCE

Staff veterinarians of the major Air Commands, who attended a three-day conference at the Air Surgeon's Office, Headquarters Army Air Forces in Washington, 29 April to 1 May. Left to right: (seated) Colonel James C. Barta, V.C., Strategic Air Command, Bolling Field, D. C.; Lt. Colonel Benjamin D. Blood, V.C., Hqs. Army Air Forces, Washington, D. C.; Colonel Charles M. Cowherd, V.C., Tactical Air Command, Langley Field, Virginia; (standing) Lt. Colonel Benjamin F. Leach, V.C., Air Materiel Command, Wright Field, Ohio; Major James C. McIntyre, V.C., Air Training Command, Barksdale Field, Louisiana; and Major Aaron F. Allison, V.C., Sixth Air Force, Panama Canal Zone. Lt. Colonel James R. Karr, V.C., Air Transport Command, Washington, D. C., was not present when the picture was taken

Army Needs Veterinary Officers

The War Department has authorized a procurement objective for the appointment of 200 first lieutenants in the Veterinary Corps, Army of The United States. Applications for commissions are solicited and it is hoped that the number who apply for and accept commission will be adequate to meet the requirements and that it will not be necessary to resort to induction of veterinarians as was recently necessary in the case of dentists.

Applicants must be graduates of approved schools of veterinary medicine and physically qualified for general service under the provisions of Mobilization Regulations 1-9. All appointments will be made in accordance with the provisions of AR 605-10 and will be for the duration of the present emergency (war period) and six months thereafter, unless sooner terminated.

The necessary forms to be completed and submitted as an application may be obtained from the Dean of any of the approved schools of veterinary medicine or by request addressed to The Surgeon General of The Army, War Department, Washington 25, D. C., attention Veterinary Division.

Applications should be submitted on War Department AGO Form 0850 and 0850-1, and accompanied by

(1) A statement that the applicant is or is not a Selective Service registrant.

(2) If a Selective Service registrant, a statement from the applicant's local board, giving his Selective Service classification and certifying that his induction has not been ordered.

(3) Evidence that he is a bona fide graduate of an approved school of veterinary medicine, or a certificate from the dean that he will graduate within sixty (60) days.

(4) Three completed copies of WD AGO Form 178-2, Classification Questionnaire of Medical Department officers.

(5) Report of Physical Examination, WD AGO Form 63.

Applicants are authorized to report to the nearest Army installation for physical examination. Necessary travel incident to this examination must be performed at applicant's expense.

The completed forms with accompanying papers, should be forwarded to the Procurement, Separation, and Reserve Branch, Military Personnel Division, Office of The Surgeon General, Washington 25, D. C.

As a further means of alleviating the shortage of veterinary officers, authority has been granted for recalling to extended active duty (upon their own application) a limited number of qualified veterinary officers who hold commissions in the Officers Reserve Corps. An officer now holding, or who has held, a commission in the Army of The United States and is on terminal leave or has been separated from the service may become eligible for recall provided he applies for, is offered and accepts a commission in the Officers Reserve Corps under the provisions of War Department Circular No. 194, 1945. An officer to be recalled must agree to serve in a category I or II status, must meet physical standards for overseas service, and must accept a temporary

Army of The United States appointment in a grade not higher than the grade in which the officer served prior to processing for relief from active duty. Officers recalled are subject to overseas assignment and subject to general downward grade readjustment procedures that may be in effect for other officers on duty. Complete details concerning recall to active duty were published in ASF Circular 82, April 1, 1946, and amendments thereto.

An officer desiring to be recalled for extended active duty must apply for such duty in writing to The Adjutant General.

* * * *

Army Veterinary Service Depicted at Convention

The Army Medical Department exhibit displayed at the San Francisco convention of the American Medical Association, July 1 to 5, 1946, included a section portraying activities of the Army Veterinary Corps during World War II. The exhibit was prepared under the direction of Colonel James A. McCallam, director of the Veterinary Division, Surgeon General's Office.

Meat and dairy inspection, service with animal units, and research activities of the Army Veterinary Corps were highlighted in this exhibit. Photographs in black and white and in color, charts, projected color slides, and equipment were displayed. Colonel Wayne O. Kester, Chief of the Meat and Dairy Hygiene Branch, Veterinary Division, SGO, and Major T. C. Jones of the Army Institute of Pathology, Washington, D. C., were in charge of the exhibit.

Inspection of perishable food products to insure a supply of wholesome food for the Armed Forces was the activity in which the greater number of Army Veterinary Service personnel were engaged during World War II. The display pointed out that in a single year, 1945, a total of 8,271,175,085 pounds of foods of animal origin had been inspected at time of procurement. Of this amount 246,349,652 pounds were rejected as being insanitary, unsound, or otherwise not up to contract specifications. In addition, all Government-owned food stocks were reinspected, when indicated, at time of shipment, while in storage, and at time of issue to insure that no unnecessary deterioration occurred and that no spoiled or contaminated food was issued to troops. The effectiveness of this inspection is attested by the fact that no serious widespread outbreaks of disease traceable to the issue of unwholesome meat, meat-food and dairy products occurred among our troops during the war.

The exhibit portrayed some of the phases of this activity, including the inspection of meat and meat-food products in the United States and in overseas theaters, the inspection of marine products, the sanitary control of milk and milk products, and the operation of abattoirs in overseas theaters. Equipment for use in food inspection was displayed, including the phosphatase kit for determining the efficiency of pasteurization of milk, indicators for determining the edibility and keeping quality of oysters, special thermometers for determining the internal temperature of meat, kits for detecting chemical warfare agents on foods, and vacuum gauges for testing canned food products.

Research activities of the Army Veterinary Corps were intensified during the war. Many were conducted as top-secret projects and are just being made known to the public. The results of a few of these projects were portrayed in the exhibit. Important contributions to the control of such diseases as rinderpest, an Asiatic cattle plague which would have resulted in disaster to our national livestock industry had it accidentally gained entrance into the United States, or had it been introduced intentionally as an enemy method of biological warfare; equine periodic ophthalmia, which causes more blindness in horses and mules than all other diseases and injuries combined; equine influenza, similar to the World War I "flu" of man; equine encephalomyelitis, horse sleeping sickness which may also infect man; and leptospirosis, a disease found in dogs and which may also infect man, were described in the exhibit.

Development of protective measures for animals against chemical warfare agents was another important research activity in which veterinary officers were engaged. Gas masks for dogs and horses were developed. Part of this equipment was displayed in use on a War Dog. The War Dog and his trainer were loaned to the exhibit by the Remount Service of the Quartermaster Corps.

Depicted also were improvements in biologic products accomplished by the Army Veterinary Corps during World War II as well as new laboratory methods for food analysis.

The United States Army used far fewer animals in this war than in World War I and fewer than did some of our allies, but when animals were used, they were essential to the accomplishment of the mission. Consequently, veterinary service with animals was vital during World War II. Some highlights of this animal service were portrayed in the exhibit. The air transportation of horses and mules, developed in the China-Burma-India theaters, and the air lift of some 2600 horses and mules over the "hump" were portrayed. The instruc-

tion of Chinese Army personnel in preventive medicine—a vital aid to our Chinese allies—was portrayed.

The elimination of equine encephalomyelitis in U. S. Army animals by use of vaccine prepared by the Army Veterinary School, was also displayed. Mention was made of the production of more than a million dollars worth of biologic products by the Army Veterinary School during the fiscal year 1946. Reference to veterinary service with Signal Corps pigeons, War Dogs, and Remount breeding activities was also included.

Army to Recruit German Shepherds for K-9 Corps

The United States Army wants to buy dogs for the K-9 Corps. To assist it in obtaining dogs of suitable type and character, the Army

German Shepherds Excelled in Performance During the War

Dog Association, comprising persons active in dog raising, has been formed and is arranging for a canine assembly to which those with dogs meeting the desired specifications can bring them for possible purchase by representatives of the Quartermaster Corps, the War Department announced in June.

On the basis of experience gained during the war when the German shepherds did outstanding work as messengers, scout dogs and sentry dogs, it has been decided to concentrate on that breed. Most of the war dogs have been demobilized, and it is necessary to fill up the ranks with new recruits. During the war the armed services depended on donations of dogs through "Dogs For Defense." That, however, was to meet the emergency of actual warfare. As a permanent policy, it has been felt desirable to purchase the dogs just as other animals are purchased.

With this end in view, the following specifications have been drafted. The dogs, to meet military requirements, must be pure-bred German shepherd males, between the ages of one and three-and-one-half years. They must be well boned, of good type, with erect ears and properly carried tails, sound in mind and body and free from disease. They must stand between 24 and 26 inches in height at the shoulder and weigh from 70 to 90 pounds. Any color will be acceptable except solid white or coats containing conspicuous white markings. For Army use dogs must be steady and fearless in disposition. Shy, nervous or timid dogs will not be accepted. The price paid for dogs which the Army feels meets its needs will not exceed $150.

Persons who feel that they have a dog or dogs meeting these specifications and who would be willing to part with them to help meet the Army's immediate needs for dogs, are urged to notify Raymond C. Smith, at Box 331, Demarest, New Jersey. As soon as the details of the proposed sales rally have been completed, such persons will be notified when and where to take their dogs to have them examined by representatives of the Army Dog Association.

Separation Criteria Lowered for Veterinary Officers

The War Department has announced a lowering of separation criteria for officers of the Veterinary Corps. Effective on July 1, 1946, the separation criteria for Veterinary and Medical Administrative Corps officers was reduced from 39 to 36 months.

The criteria for Medical Corps officers is 24 months, for Dental Corps officers 30 months (effective Sept. 1st), for nurses 14 months and for physical therapists and dietitians the requirement for separation is 25 months.

The War Department also announced that if an officer in the Medical Department is surplus to the major command or army area in which he is serving and is within two months of eligibility for release, he will be discharged at once. If he is surplus to such command and is not within two months of eligibility for release, he will be reported to higher authority and released, if suitable assignment is not available.

Officers who have become eligible for release will be separated or enroute to the U. S. for separation within 60 days.

The newly-established criteria are expected to affect the release of 3,000 Medical Corps, 1,000 Dental Corps, 100 Veterinary Corps, 75 Sanitary Corps, and 400 Medical Administrative Corps officers.

British Army Veterinary Service Varied

A report of the British Army veterinary service in India and its counterpart in the Indian Army, records that, during the late war, it had to contend with a monthly average of 65 different ailments of horses, mules, donkeys, camels, elephants, cattle and buffalo, dogs and sheep, goats, swine, rabbits, chickens, geese, ducks, carrier pigeons and laboratory animals.

Among the more important infections with which the Army veterinary services have to contend in India are, surra, rinderpest, anthrax, glanders, brucellosis, contagious pleuropneumonia, foot-and-mouth disease, encephalomyelitis, strangles, salmonellosis, pasteurellosis, babesiosis, coccidiosis, epizootic lymphangitis, mange, horse pox, cow pox, fowl pox, Ranikhet and fowl plague. In addition there were various parasitisms and non-infectious ailments with which to contend.

The Indian Army Veterinary Service, which comprises both British and Indian officers performed a variety of duties in the late war, including:

1. A remount service for procuring the animals used by the army for transportation, which included horses, mules, donkeys, cattle, buffaloes, camels and elephants.

2. Supplying a veterinary service for the army's transport animals.

3. Army farms are operated on which remount animals were conditioned before being issued to the troops and on which grain and forage was produced for army animals. Cattle were purchased and brought to these farms for fattening and then slaughtered for the army's food supply. Extensive swine, poultry and rabbit breeding, feeding and slaughtering operations were conducted, the necessary feed and pasture being produced on the farm.

4. All foods of animal origin purchased locally for the Army in India were inspected by the veterinary service.

5. Garbage feeding of swine was practiced at all installations of considerable size. The garbage was cooked before being fed and in most instances the swine to which it was fed were raised on the premises.

6. Army animals no longer serviceable were, when suitable, used for the production of sera and vaccines for use of the army medical department and of course for use by the veterinary service also.

7. Emergency research was carried on continually by the veterinary service to improve its methods of treating and preventing animal diseases.

8. A training school was operated by the veterinary service for training its own non-professional personnel and for training of selected officers of infantry, artillery and other branches of the army that use animals for transport, in the care of their animals. It developed that this was a very necessary measure for animal conservation.

Military dairy farms were established in India many years ago. They were enlarged during the late war to include a total of 5,000 cows, part native and part imported, and 45,000 buffaloes. The milk of the latter contains 7% to 8% butterfat but is reduced to 3.7% by the addition of separated milk. All is pasteurized before use.

The large farms contain 2,000 to 3,000 cows. A small veterinary hospital is provided for each farm. One veterinary officer is allotted for each 1,000 cows. Most of the milk is consumed as fluid milk but butter and cheese are also manufactured.

The buffalo cows suffer many injuries to the tail, which is very long, and many broken horns and horn gores in the fights which are frequent. They also suffer a greater incidence of traumatic pericarditis, mastitis and prolapse of the uterus than the imported cattle. Retained placenta was at first very frequent among the buffaloes but it was discovered that allowing the newborn calf to suckle for four days obviated most of this trouble.

Sterility in buffaloes is common and difficult to treat. The physical signs of estrus are not marked and bulls must be allowed to run with the cows. Artificial insemination is difficult. The os uteri opens from the floor of the vagina and it is very difficult to pass a tube into it. The period of gestation is about 10 months.

All animals born on the farm and all purchased are vaccinated against rinderpest by an inoculation with goat's blood virus. Few herds escape an annual or more frequent outbreak of foot-and-mouth disease. Buffaloes and native cattle usually are not seriously affected by the disease. In imported cattle the lesions may be severe and the mortality considerable. Sporadic cases of anthrax are common in the country but the imported animals on military farms are adequately protected by routine vaccination every six months with a saponin glycerinated spore suspension. Outbreaks of cowpox have been common. Recently a policy of routine vaccination of all purchased animals has been adopted. Tuberculosis and Johne's disease are uncommon.

Livestock Parasite Control Promising*

The future of livestock parasite control is brighter than it has been for many years. Research has provided chemical and other weapons to cope with many of the most damaging parasites that stand in the way of essential goals in livestock production.

DDT Preferred for Many Parasites

DDT promises to become a preferred weapon in the control of many species of parasites and pests, although it is highly toxic to some animals and must always be used with caution. Dusting powders containing up to 10% DDT do not appear to present serious risks of intoxication to animals, and lower concentrations in most instances are adequate to achieve the desired action.

Rotenone Useful against Warbles

Rotenone remains uniquely effective among treatments against cattle grubs. Solution of 1% derris or cube powder, of 5% rotenone content, destroy from 90 to 95% of the grubs and at the same time destroy all of the lice that are on an animal at the time of washing. Dilute rotenone dips have proved effective also against sheep keds. A new remedy known as Formula M.S. 793F is a killer of fleeceworms, which rank next to screwworms in the injuries caused by their infestations of sheep. The mixture, which is safe, effective, readily available and inexpensive, penetrates the wool and eliminates the need for shearing before treatment.

Gammexane Effective Against Mites

A new British insecticide, gammexane, is of interest not because of its alleged superiority to DDT, but on account of its possible complementary action. Gammexane, unlike DDT, appears to be quite effective in destroying mites. It seems possible, therefore, that this new agent may prove useful in combating sheep and cattle scab, poultry mites, and various forms of mange in dogs and in swine and other animals, including fur bearers. It is reported to be highly effective against mites and lice in 1% solution in liquid paraffin.

A New Parasiticide

Another chemical, new in this field, has been recommended highly as an insecticide: Cerbinol for ringworm in cattle, foot-rot in cattle and sheep and moist eczema and ear canker in dogs.

*From a discussion at the Ohio State University, 15th Annual Conference for Veterinarians, Columbus, June 12-14, 1946, by R. E. Rebrassier, Columbus, O.

Phenothiazine Most Used Parasiticide

In treatment for removal of internal parasites, there are relatively few new developments in the use of phenothiazine, although this drug continues to be the most widely used of all livestock anthelmintics. In ruminants, it is highly efficient in removal of the Trichostrongylus and Oesophagostomum, in doses of 45gm for cattle and 24gm for sheep. Mixed with the salt allowed sheep, phenothiazine prevents the development of stomach worm eggs.

Sodium Fluoride Successful Taeniacide

Experiments with sodium fluoride reveal that this chemical merits consideration as a swine ascaricide. Present information indicates that the administration of sodium fluoride at the rate of 1% of the feed for one day, may be expected to remove over 90% of the ascarids without risks of injury to the animals. The treatment should not be repeated until at least two weeks have elapsed.

* * * *

Favorite Drugs a Generation Ago

Dr. P. A. Fish has been conducting an investigation to ascertain the drugs most used by the veterinarians of New York.

A list containing 104 drugs was mailed to all veterinarians in New York state, with the request that they check the drugs in the list which they commonly used. Each veterinarian was also asked to supply an additional list containing his five favorite or most used remedies.

The replies to this inquiry are given in the *Cornell Veterinarian*, in part as follows:

"The first 10 in the list of the more commonly used drugs with the number of veterinarians checking them follows:

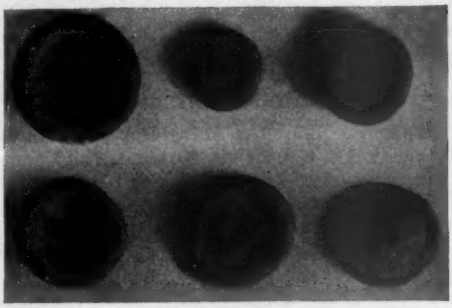
"Nux vomica, 231; aloes, 204; Epsom salt, 161; potassium nitrate, 158; belladonna, 150; chloral, 148; arecoline hydrobromide, 140; linseed oil, 132; aromatic spirits ammonia, 124; cannabis indica, 123. Bacterins came 20th in the list and was checked by 90 veterinarians.

"In the special list of five indispensable or favorite drugs, it was found that aloes, including aloin, was designated as first choice; nux vomica, including strychnine, as second; aconite, including aconitine, third; arecoline hydrobromide, fourth; chloral hydrate and opium, including morphine, received each the same number of votes for fifth place. Nux vomica headed the list in the four remaining groups. A comparison of the first five drugs in the five groups showed that aloes and nux vomica appeared in all five; chloral hydrate in four; arecoline hydrobromide in three; aconite,

The Doctor's Drugs, *Vet. Med.* 8:6, pp. 319-320. 1913.

opium, belladonna and cannabis indica in two, and quinine in one.

"Disregarding the order of choice and taking the totals of the first five drugs in the five groups independently of the groups in which they appeared, it was found that nux vomica including strychnine was chosen by 208 veterinarians; aloes, including aloin, by 174;



Seeds of Strychnos Nux Vomica.—The most popular drug a generation ago

aconite, including aconitine, by 112; chloral hydrate by 92; arecoline hydrobromide by 84. Taking the five groups as a whole nux vomica leads with aloes a fairly good second.

"A total of 81 was included in the five groups of indispensable drugs. It is interesting to note that one of the five drugs chosen, arecoline hydrobromide, is not official.

"To the inquiry as to the use of an automobile in practice, 185 responded in the negative and 118 in the affirmative, while 25 of the lists remained blank on this point."

* * * *

No Temporizing with Safety Permitted

In the case of food, the federal Food, Drug and Cosmetic Act deems it adulterated: "If it consists in whole or in part of any filthy, putrid, or decomposed substance, or if it is otherwise unfit for food." That language is concise, it doesn't give anyone sanction to prescribe administratively how *much* filthy, or dirty, or putrid, or decomposed material a food product may contain. Again, the law states, food is deemed to be adulterated "If it has been prepared, packed, or held under insanitary conditions, whereby it may have become contaminated with filth, or whereby it may have been rendered injurious to health." Nothing here grants the enforcement official latitude with respect to permitting the return of a certain percentage of dirty cans to producers. Dirty cans serve to contaminate the product, both from the bacterial standpoint as well as with actual dirt or filth. Nothing grants the administrative official permission to allow the use of dirty plant equipment that comes in actual contact with the milk or cream. Nothing is here to guide him as to numbers of rodents, cockroaches, ants, flies, silver fish, mites, lice, cats or dogs that can inhabit your plant; all of these are contributing factors to plant insanitation, and they do not belong in sanitary dairy establishments. The administrative official is not vested with authority to permit sick people with communicable diseases, or others with open sores upon their hands and arms to work in sanitary establishments. We cannot allow use of dirty toilets with perhaps no soap or towelling provisions in a plant that law decrees should be sanitary. The last provision of the statute in which you are interested reads in part as follows, a food product is adulterated; "if it is in whole or in part the product of a diseased animal . . ." Again, nothing to give the administrator authority to permit the continued use of milk or cream from herds containing cattle suffering from brucellosis or infectious mastitis. As far as I am concerned, you can eliminate the milk from the cow that is, "just a little bit sick," it may get worse.—From an address delivered at a convention of the Colorado and Denver Dairy Products Associations, April 8, 1946, by Wendell Vincent, Chief, Denver Station, U. S. Food and Drug Administration.

* * * *

Rabies and Distemper

Dogs are susceptible to many contagious diseases, the most common of which are rabies and distemper. In certain communities rabies among dogs presents a great problem. If dogs become infected, it becomes a public health problem, for the dogs have to be quarantined and all persons who have been exposed to infection by them must take treatment to prevent the disease. Rabies can be handled very easily and effectively if everyone in the community will coöperate with the livestock sanitary and the public health authorities. First of all, owners must confine their dogs during an outbreak. Second, the authorities in these areas must eliminate all stray dogs. Third, there must be vaccination of all well dogs with rabies vaccine, which is very effective in preventing the disease. In areas where rabies vaccine is given to dogs as a prophylactic treatment, it has stopped the outbreak and it will not injure the dog.

The disease which causes the death of more dogs than any other, is distemper. It occurs in all countries of the world and in all parts of the United States. It appears at all seasons of the year, but is probably more prevalent

during the late fall, winter and early spring than during the summer season. Serums and the sulfa drugs are very effective in the treatment of this disease, and a much larger percentage of affected dogs are saved now than in the past. If the dog is vaccinated against distemper before it is exposed, it is possible to establish permanent immunity. It is almost impossible to raise dogs in a city without exposing them to distemper, hence it is very essential that they be vaccinated as puppies. —From a discussion at the 64th annual meeting of the Illinois Veterinary Medical Association, by *Wayne H. Riser,* Des Moines, Ia.

"Big Boy"

Big Boy is the property of Miss Wilhelmina Dimling, Pittsburgh, Pa., who has owned him for 21 years. He was six months of age when she acquired him. Big Boy is in good physical condition. His eyes, heart and appetite are excellent despite his advanced age. He is hard of hearing and somewhat rheumatic, however.—*Wesley A. Clem Jr., Capt. V.C.*

Protection of Animal Experimentation

The moral code of civilized man reads thus: As between man and animals, man comes first. This is the law of life. But when man uses or destroys animals for man's own protection, aid and other needs, such use must be conducted without cruelty. Certainly it cannot be immoral to use animals humanely to mitigate human suffering due to disease, as long as we believe animals may be sacrificed for human food and clothing. If man is not worth more than the dog, then our efforts to improve man is an error.

We use animals, by common consent, for food, for clothing, for labor, for pleasure. How can it be wrong to use animals humanely to increase our understanding of life, our control of disease, both of which contribute to human happiness? We must retain a sense of proportion.—*Anton J. Carlson in J. Am. Med. Assn.,* May 4, 1946.

On the average 90% of all cases of rabies occur in dogs and 10% in all other animals including man.

* * * *

That livestock require salt is accepted by all farmers, but fewer than 25% feed enough of it or feed it in the right way. The need for salt varies among animals as much as 100%. For best results salt should be supplied to animals free choice.

* * * *

Prostigmine Controls Spasm

James E. Bell, Jr., M.D., Roper Hospital, Charleston, S. C., reports "Dramatic and complete relief of muscle spasm and pain" within an hour after a single injection of prostigmine (neostigmine methyl sulfate) in a case of poisoning due to the bite of a black widow spider. The description of the effect of this synthetic drug on spasm of muscles indicates that it may be worthy of trial in animals in such conditions as eclampsia, tetanus, fright disease and perhaps some other convulsive ailments.

* * * *

Sheep undoubtedly get the rawest deal of all farm animals. From the standpoint of feed, care and medical attention, the sheep has been traditionally neglected. Because of her heavy fleece in the winter months loss of weight in the ewe is not readily detected. If a breeding ewe does not gain approximately 30 pounds during gestation there is evidence of either disease or malnutrition. At least 5% of the breeding ewes are lost during this period.—From a discussion at the 33rd Annual Veterinarians' Short Course at Purdue University, by *E. E. Hull,* Lexington, Ky.

* * * *

Three British industrial research workers, G. A. Campbell, F. C. Hymas and T. F. West, according to the December 22, 1945, issue of *Nature,* incorporated DDT in ordinary household soap. They used this soap for washing twelve dogs, all of the long-haired breeds, and all infected either with fleas or dog lice. Not only did this soap cause the prompt death of all the vermin, but equally important, none of the animals became reinfested even though they were exposed. Only one of the dogs picked up a few fleas nine weeks after the new soap treatment. Analysis of samples of hair clipped from the dogs, after washing with the DDT soap and rinsing, indicated that the insecticide was effective in concentration of from five to seven hundredths of one per cent. —*Soap Uses in Modern Industry.*

Bovine Sterility*

STERILITY is a poor name for temporary infertility, which is the ailment veterinarians are called upon to treat, but it has been used so long and so widely to describe the condition in which there is an interruption of the normal breeding cycle in our domestic animals that the term is now permanently established in veterinary nomenclature.

Temporary infertility has given rise to one of the few specialities among veterinarians. There are a number of what are termed sterility specialists who travel up and down the eastern seaboard and treat many of the better herds for reproductive disorders. Local practitioners do all the remaining veterinary work in these herds. The reason for this arrangement is a bit difficult to understand. There isn't anything the expert can do for these herds that the local practitioner cannot do, or cannot readily learn to do. Further, the latter has the advantage of knowing the history of the herd. For example, a cow that suffers from eversion of the uterus is quite apt not to breed again. The local practitioner who treated her knows this part of her breeding history. The expert does not and may not, in the course of his visit, ascertain it nor learn of other conditions concerning feed, infections, dystocias, length of the non-lactation period, etc., that may affect the breeding efficiency of the individual animal.

It has been said there are just three fundamentals requisites for the treatment of temporary infertility.

1. Knowledge of the antomy of the reproductive organs.
2. Knowledge of the function or physiology of the reproductive organs and
3. Knowledge of the diseases of the reproductive organs.

There are three systems involved in temporary infertility—the endocrine system, the nervous system and the genital system. Each of these systems has an influence upon the other two and in turn, is influenced by each of them.

For a simple illustration of the effect of one system upon another, let us assume a common occurrence—a dairyman purchases an expensive bull, paying, let us say $5,000.00 for him. He is trucked a distance of 300 miles in a day. The driver neither knows nor cares anything about livestock. He drives carelessly, turns corners without slowing, stops and starts suddenly. Only those who have tried to stand in a truck while it rounded a corner rapidly, realize it is nearly impossible to keep from falling and appreciate the nervousness, even fright, of the bull under those conditions. The fatigue occasioned by 10 to 15 hours of such experience is great. When the dairyman gets him home, the bull is bred to a heifer. She conceives. In the following days and weeks, he is bred to a number of cows; none conceive. This continues for perhaps three to six months. This is a common history. Many of these high-priced bulls are sent to slaughter by their discouraged owners. This is clearly a case where the nervous system affects the genital system, perhaps also the endocrine system, to produce temporary sterility. Time is the only remedy for the condition, time to allow the nervous system to recover from the injury it suffered from the trip by truck.

Old horsemen appreciated the effect of one system upon another. They furnished support for the scrotum of stallions during a race and they knew when a stallion was retired from the track to the stud, it might take some time, perhaps several months for him to become a breeder.

Other common examples of this inter-relation between the nervous, the endocrine and the genital system is seen in the effect of retained placenta and pyometra upon the corpus luteum and of cystic ovaries upon the disposition of the animal. The erratic behavior of the cow with cystic ovaries and the viciousness of the nymphomaniac are known.

This section is the most important cattle producing region in the nation. Only Texas with 7,000,000 cattle has a greater number than Iowa with its five million. Iowa and the states bordering it contain 75% of all the cattle in the country. Anything that interferes with normal reproduction of cattle in this area is of great concern to veterinary practitioners and to the cattle industry, which is responsible for a larger share of the income of our farm population than any other branch of agriculture.

Eighty-five percent of temporary infertility in the cow is due to mechanical causes; 65% to cervicitis and 20% to other mechanical interferences.

Examination of the semen is routine in examining bulls to determine their probable breeding efficiency. Semen collected by massage of the seminiferous vesicles is apt to be misleading. An artificial vagina should be employed for the collection of semen for examination.

*Notes from a discussion at the 40th Annual meeting of the Mississippi Valley Veterinary Medical Association, Galesburg, Ill., No. 15-16, 1945.

Equine Infectious Anemia In Brood Mares and Their Offspring

By C. D. STEIN* and L. O. MOTT*
Washington, D. C.

IN A recent paper[1] the authors reviewed the literature on hereditary transmission of equine infectious anemia and presented evidence that the milk of infected mares and the semen of infected stallions may contain the virus of the disease. Evidence was also reported that transmission of the disease from an infected mare to its offspring may occur during intrauterine life. Furthermore, it appeared that a normal colt may acquire the disease from nursing an infected mare.

A number of susceptible brood mares and colts of different ages, that had been used in periodic ophthalmia studies, became available for experimental work on infectious anemia. To clarify further the results of the previous investigations and to obtain additional information on this subject, the following studies were carried on.

Materials and Methods

The strains of virus used in these experiments were obtained from horses experimentally infected with strains of virus originally isolated from field cases of infectious anemia in outbreaks occurring in Wyoming, New York, and California.

The brood mares and other susceptible horses used in these experiments were of the light type, 1,000 to 1,200 pounds in weight, and

Fig. 1. Type of normal brood mare and colt used in experiments

were held under observation in screened isolation stables provided with concrete floors and screened vestibules. The normal colts used in the susceptibility experiments were born and raised in an isolated breeding unit at the Agricultural Research Center, Beltsville, Maryland (Fig. 1). As far as can be determined, none of the animals had any previous contact with horses affected with infectious anemia. Temperatures of all the test animals were recorded at least twice daily. Special precautions were taken to exclude all possibilities of accidental transmission.

The samples of foal blood tested for the presence of virus were collected from the foals immediately after birth and before they had nursed their dams.

The sample of milk from an infected mare, tested for the presence of virus, was collected by stripping into a sterile beaker after thoroughly cleaning and disinfecting the udder.

Attempts to Transmit the Disease from Infected Brood Mares to Suckling Colts

Experiment 1 (*plate* 1).—Horse 1112, a brood mare with a suckling colt, No. 1353, at her side, was exposed May 15, 1942, by subcutaneous injection of 30cc of defibrinated blood from horse H-1324 infected with California strain of virus. May 24, 1942, or nine days following exposure, mare 1112 developed symptoms of infectious anemia. The disease ran a subacute course, and after 19 intermittent febrile reactions the animal became moribund and was destroyed March 11, 1943. Post-mortem examination showed well-marked lesions of infectious anemia.

To determine whether the milk of this mare contained the virus, 200cc of her milk was injected subcutaneously into normal horse 1347 October 14, 1942. November 1, 1942, or 18 days following injection of the milk, the latter animal developed typical symptoms of infectious anemia definitely indicating that the milk contained the virus.

Although colt 1353 had nursed and was in intimate contact with infected mare 1112 for 4½ months, no symptoms of infectious anemia developed. The blood of this nursing colt, collected on the 72nd day after its dam's first reaction, was tested for the presence of virus by injecting 120cc of its blood subcutaneously into normal brood mare 1316 nursing normal colt 1354. A very mild and questionable reaction, characterized by a temperature of 101.2°

*Pathological Division, Bureau of Animal Industry, Agricultural Research Administration, Washington, D. C.

F. for one day, with no other clinical symptoms, occurred in this mare on the 55th day, but her colt, after nursing for 74 days following the mare's exposure, failed to show any reaction.

This test appeared to indicate that the disease was not transmitted to suckling colt 1353 by nursing its infected dam 1112.

To determine the susceptibility of suckling colt 1353, brood mare 1316, and her suckling colt 1354, these animals, along with a normal control horse, No. 1308, were each injected subcutaneously with 100cc of whole blood from infected mare 1112. All the animals injected developed symptoms of infectious anemia on the 12th to the 14th day, indicating that all were susceptible and none of them were carriers of the virus; also that the milk from the infected dam failed to impart any immunity against the disease to suckling colt 1353.

Experiment 2.—Horse 1139, a brood mare with a suckling colt, No. 1356, at her side, was exposed July 31, 1942, by subcutaneous injection of 10cc of lyophilized Wyoming virus, Lot 1295. August 12, 1942, or 12 days following exposure, the mare developed symptoms of acute infectious anemia from which she died 11 days later. The colt, which had nursed and was in close contact with its infected dam for 11 days, failed to show typical clinical symptoms of infectious anemia but developed a mild temperature reaction on the 15th day. Four additional intermittent mild febrile attacks, characterized by one to two degrees of elevation in temperature for one day, occurred during the following 10½ months which suggested the possibility that the disease may have been transmitted in a highly modified form. The colt received an injury to the back and was destroyed about a month subsequent to the last mild temperature reaction. Autopsy and histological findings were negative for infectious anemia (Fig. 2).

To test further the blood of colt 1356 for the presence of virus, October 13, 1942 normal horse 1363 and normal colt 1346 were injected with 600cc and 10cc respectively of whole blood collected from colt 1356, 47 days after its first temperature reaction. The injected horse developed a mild temperature reaction on the 20th day, which was followed by two additional mild temperature reactions on the 28th and 49th days, respectively. The injected colt developed a very mild temperature reaction on the 94th day, followed by a second mild reaction on the 100th day. Aside from these mild temperature reactions, no other symptoms suggestive of infectious anemia occurred in either animal. The blood from the horse was then tested for the presence of virus by injecting intravenously, March 23, 1943, 1,000cc of its blood into normal horse 952, which remained normal for 93 days.

To test further the blood from colt 1356, 200cc of its blood, collected June 24, 1943, was injected subcutaneously into horse 952, which again failed to develop symptoms typical of infectious anemia.

As a concluding test, the animals injected with the blood of colt 1356, namely, horse 1363, colt 1346, and horse 952, were each exposed to a known virulent strain of Wyoming virus, Lot 1295. All developed symptoms of infectious anemia indicating they were susceptible.

The disease ran an acute, fatal course in horse 1363 and colt 1346 whereas horse 952, after four intermittent acute attacks, developed into a chronic carrier and at this time

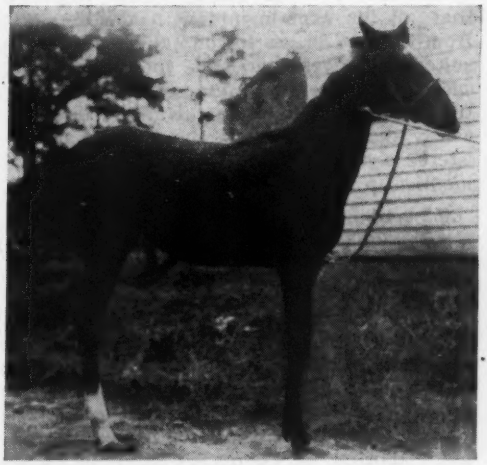


Fig. 2. Colt 1356, 10 months after it had nursed its infected dam 1139. Colt had several very mild temperature reactions but no other clinical symptoms indicative of infectious anemia

(more than two years after exposure) is still alive. Horse 952 is one of the few horses that have survived exposure to this virulent strain of virus. Whether the animal was naturally resistant or whether the resistance was increased by the previous injections of blood from horse 1363 and colt 1356 was not determined.

Experiment 3.—Horse 1198, a normal brood mare with a suckling colt, No. 1358, at her side, was exposed August 11, 1942 to 90cc of intrauterine blood from colt 1360, foaled by infected mare 1116. August 24, 1942, or 13 days subsequent to exposure, horse 1198 developed mild symptoms of infectious anemia and a second reaction occurred a week later.

No definite reaction occurred in colt 1358,

which was in contact with and nursed its infected dam for 38 days. This colt was then exposed by subcutaneous inoculation of 10cc of known virus (W-1295) and promptly developed infectious anemia.

This experiment indicates that colt 1358 had failed to acquire the infection or immunity against the disease by contact with and by nursing its infected dam for 38 days.

In connection with our failure, in these three experiments, to obtain definite evidence that an active form of the disease can be transmitted from infected mares to suckling colts by nursing, it is noteworthy that many investigators have pointed out the difficulty encountered in attempting to transmit the infection by contact or by feeding the blood, urine, saliva, or feces from infected horses. In our studies reported elsewhere[2] we have made similar observations. Scott[3] reported that all his experiments with feeding milk from infected mares to colts and stallions resulted negatively, whereas the injection of such milk into each of three horses gave positive results. Troitskit and Klimov[4] have recently shown that when the virus is administered *per os*, it may be inactivated or highly modified by the action of the gastric juice.

Effects of the Virus on Pregnant Brood Mares and Their Offspring

Experiment 1.—Horse 1126, a brood mare, pregnant about 5½ months, was exposed October 13, 1942, by subcutaneous injection of 10cc of blood from infected horse 1295. October 30, 1942, or 17 days following exposure, the mare developed symptoms of acute infectious anemia. During the 5th intermittent febrile attack, which occurred December 5, 1942, the mare aborted its 7½-month-old fetus. Post-mortem examination of the fetus showed lesions indicative of acute infectious anemia, and histological examination of sections prepared from tissues of the fetus revealed pathological alterations characteristic of the disease.

The results of this experiment indicate that infected mares may abort during, or following, the intermittent febrile attacks that occur in the course of the disease. This confirms our observations in our previous experience with this aspect of the disease in some pregnant mares.

Experiment 2.—Horse 1116, a brood mare, pregnant eight months, was injected subcutaneously May 15, 1942 with 25cc of defibrinated blood from a carrier, No. 856. June 10, 1942, or 26 days following exposure, the mare developed symptoms of infectious anemia. The disease ran a subacute course and August 11, 1942, or 62 days subsequent to the appearance of first symptoms and following the 5th intermittent febrile attack, the mare foaled a full term colt. Blood collected from the colt immediately after it was foaled and before it was allowed to nurse its infected dam, when injected into normal horse 1198, produced symptoms of infectious anemia in 13 days. The colt had four intermittent febrile attacks and developed an infection of the fetlock 17 days following birth. It died on the 48th day and post-mortem and histological findings indicated infectious anemia and pyoseptic-emia. The results of this experiment indicate that the colt acquired infectious anemia by intrauterine transmission from its infected dam.

Experiment 3.—Horse 1070, a brood mare, pregnant 8½ months, was injected subcutaneously July 31, 1942 with blood from horse 1319 infected with New York strain of virus. August 9, 1942, nine days following exposure, mare 1070 developed symptoms of infectious anemia. October 13, 1942, 34 days after the second febrile reaction, she foaled a full term colt, No. 1366 (Fig. 3). A sample of blood, collected from the colt immediately after it was born and before it was allowed to nurse its infected dam, was tested for infectivity by injecting it subcutaneously into a normal mule, No. 1365. This animal failed to develop a temperature reaction or any visible clinical symptoms of infectious anemia, but died suddenly on the 47th day following exposure. Post-mortem examination showed well-marked lesions of infectious anemia, and histological examination of sections prepared from the tissues revealed pathological alterations identical with those found in infectious anemia. In this connection, it is interesting to note that mules appear to be more tolerant to the virus than horses. In one of our early experiments, a mule injected with material containing virus behaved

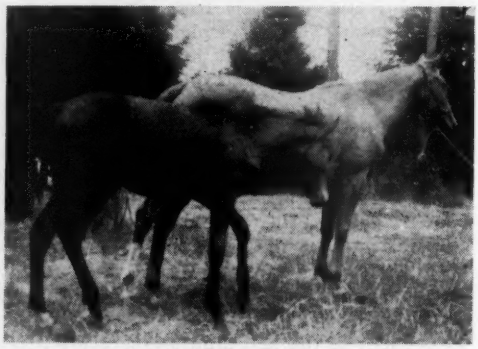


Fig. 3. Infected brood mare 1070 and her colt 1366 infected at birth. Picture taken about 9 months following birth of colt. Both animals are carriers

in a similar manner, dying suddenly on the 36th day following exposure without showing any previous symptoms indicative of infectious anemia.

On the basis of the post-mortem and histological findings in this mule it appears that the animal died of infectious anemia and that the blood of foal 1366 at birth contained the virus of infectious anemia. Furthermore the foal, 34 days after birth, had a temperature reaction which reached a maximum of 105.4°F. followed by at least seven additional reactions. However, blood samples collected from this animal September 3, 1943 during the 8th mild reaction failed to produce visible symptoms of the disease in normal horse 1376 for 90 days. This horse and colt 1366 were then exposed to the same strain and dose of virus on the same day. The former developed a mild attack of the disease but the latter showed no reaction for 105 days.

These results indicated that a subclinical form of the disease apparently had been produced in horse 1376 by injection of blood from colt 1366, which increased its resistance to subsequent exposure while colt 1366 itself was a carrier and therefore this animal resisted exposure.

Tests on the Susceptibility of Colts

This experiment was carried out to determine whether colts are more resistant to the disease than adult horses.

Eight colts, ranging in age from sucklings to three year olds, together with two mature horses, were each injected on October 13, 1942 with 10cc of virulent blood W1295. All the animals developed symptoms of the disease,

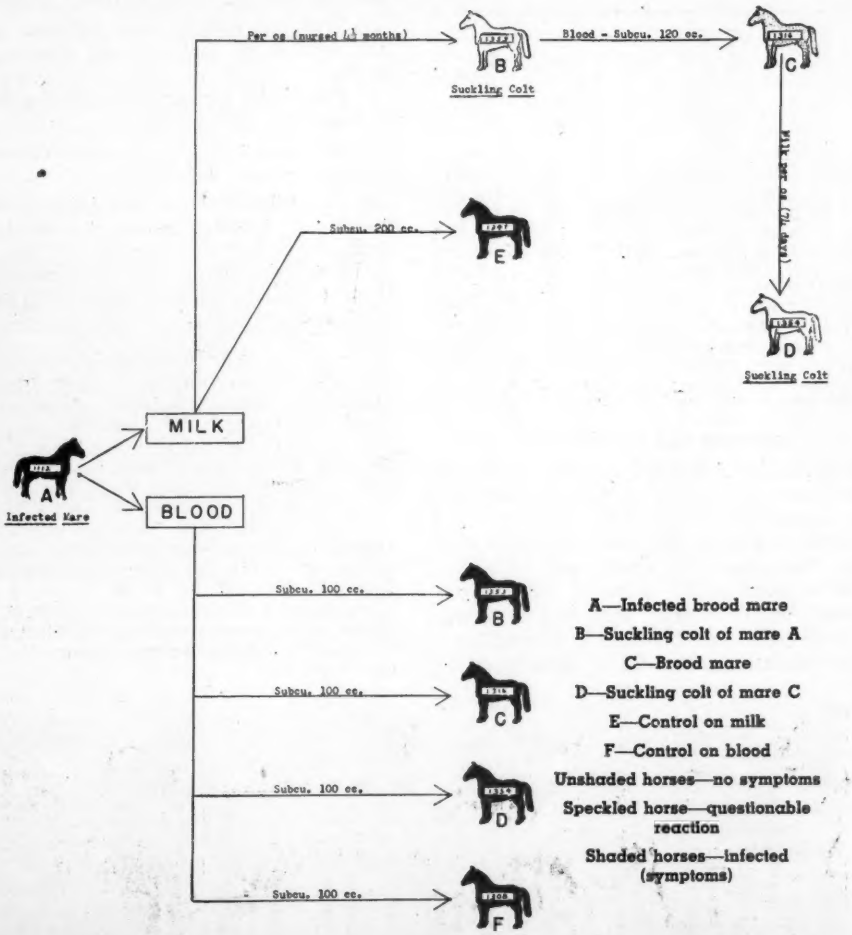


Plate 1. Transmission of infectious anemia with the milk secretion and the blood of an infected brood mare

the incubation period in the colts ranging from 13 to 16 days and in mature horses, 13 to 17 days. The maximum temperatures registered in colts during acute attacks ranged from 104.8° to 107.8°F. while the maximum temperatures attained in the mature horses were 105.8° and 106.5°F. Three of the colts, a suckling, a one-year-old, and a two-year-old, died following an acute attack while all the other animals in the test were sacrificed following several intermittent febrile attacks.

The results of this test indicated that colts, ranging in age from suckling to three-year-olds, are as susceptible to the disease as mature horses (Table I).

TABLE I. COMPARISON OF SUSCEPTIBILITY OF COLTS AND MATURE HORSES TO INFECTIOUS ANEMIA RESULTING FROM INJECTION OF 10CC OF VIRUS W1295 ON THE SAME DAY

Animal designation No.	Stage of development of animal when exposed	Days between injection and appearance of symptoms	Maximum temperatures (°F)
1359	Colt (suckling)	15	106.2*
1358	Colt (suckling)	16	105.6**
1357	Colt (less than 1 yr.)	16	104.8*
1345	Colt (1-year-old)	14	106.8**
1309	Colt (2-year-old)	13	106.6**
1304	Colt (less than 3 yr.)	13	107.8*
1306	Colt (less than 3 yr.)	14	105.5*
1302	Colt (3-year-old)	13	106.2*
1126	Mature horse	17	106.8*
1231	Mature horse	13	105.0*

*Sacrificed after several intermittent febrile attacks.
**Died after several intermittent febrile attacks.

Summary and Conclusions

Transmission studies on equine infectious anemia were conducted in 1942 and 1943 with seven susceptible brood mares and 14 colts, the latter varying in age from suckling to three years. The strains of virus used were from horses experimentally infected with strains isolated from field cases occurring in Wyoming, New York, and California. The mares in the experiments were of the light type and were held in screened isolation stables with concrete floors. The colts were born and raised in an isolated breeding unit at the Agricultural Research Center, Beltsville, Md. Following are the results obtained.

1. No definite evidence was obtained that foals may become infected with infectious anemia with typical clinical symptoms by suckling their infected dams or by close contact with their dams. In one of three cases, questionable evidence was obtained to indicate the possibility that a highly modified subclinical form of the disease may be so transmitted. This confirms our previous finds that it is difficult to transmit the disease by administering infective material *per os* or by direct contact.

2. Milk from infected dams imparts no immunity to suckling colts since the latter animals are susceptible to artificial infection.

3. Pregnant mares, when infected, may or may not abort their fetuses during febrile attacks.

4. Full-term, but weak infected colts, may be foaled by infected mares.

5. Surviving foals from infected mares may be inapparent carriers.

6. The milk secretion and intrauterine circulation of infected mares may contain the virus.

7. Normal suckling colts and weaned colts of different ages are as susceptible to the virus by subcutaneous injection as adult horses.

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Present Day Horse Practice

HORSE practice differs now from what it was 25 years ago. It is less in amount of course and cases of communicable disease are relatively fewer. Many farms in Iowa have no horses on them; an even greater number have only one team. This obtains on even many large farms. Some extensive farms maintain two or three or four teams, but on the majority of all farms the heavy draft work is accomplished in the main by mechanical power.

Impaction of the Colon

The ailments of the horse on Iowa farms are mainly due to digestive derangements of which impaction of the colon, due to coarse fiber sometimes admixed with sand, is the most common. The condition is not particularly acute and many impactions have existed for some time before a veterinarian is called. Diagnosis is not difficult. There is a history of inappetence and the passage of scanty feces. Adominal pain is exhibited. If, in addition, the animal is aged, its teeth in poor condition and it has been fed coarse roughage such as alfalfa stems, the setup is most

Early in impaction the animal suffers intermittant abdominal pain, there is a history of inappetence and the passage of scanty feces

suggestive of impaction of the large bowel. If confirmation is needed the obstruction can usually be palpated readily by rectal examination.

The easiest treatment, when it works, is one of the quick acting cathartics, of which lentin is by all odds the choice. A subcutaneous injection of 3cc to 5cc of lentin will often soften the obstructing mass in about two hours and start it on its way. If the condition has not been relieved in, at the longest, 10 hours then a second dose of lentin may be given.

Stubborn cases, and many of them are stubborn, are probably best treated by injecting a liquid directly in the obstructing bolus with a Kippen needle. That is a 16-gauge, hypodermic needle 12 inches long, or better still, 14 inches long. First adjust breeding hobbles to prevent the animal from kicking. Then shave and disinfect a small area in the right flank; anesthetize the puncture area and make a short incision through the skin only, directly below the tuber coxae and midway between it and the lower margin of the flank. Pass the left arm into the rectum and, if possible, locate the obstruction. With the free right hand press the needle slowly through the abdominal wall and with the left hand in the floating colon guide it to the obstruction. When the point of the needle has contacted the gut where the bolus is lodged, place the hand on the opposite side of the obstruction and have the assistant, with a quick thrust shove the needle well into the mass. The assistant should then attach a Shikles' vaccinating apparatus and force at least a quart of liquid—a weak solution of magnesium sulfate is very satisfactory—into the mass. The long cylindrical masses are the most difficult to break up. Spherical masses of about the size of a football break up easily. When the mass can be felt to be disintegrating the needle is withdrawn and the operation is over.

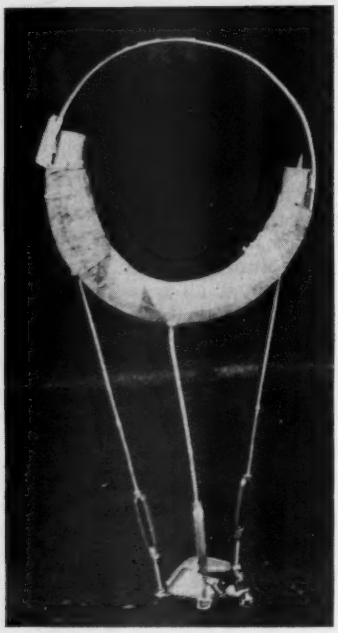
The animal can be quieted for the operation by the use of chloral. Chloral is indicated also for the relief of the colicky pain which may last for some hours after the operation is completed.

Whether the obstruction is relieved by cathartics, by the Kippen needle or by reaching it via the rectum and removing it manually, after-treatment is necessary. The gut is always in a state of low tone after impaction and requires stimulation. This is accomplished readily by two-dram doses of nux vomica every four hours for a couple of days. A light dose of epsom salt or mineral oil given through a stomach tube will aid materially in evacuating the accumulated intestinal contents.

*Notes from an address, by Dr. J. C. Carey, West Liberty, Iowa, at the 21st Annual Conference for Veterinarians, School of Veterinary Medicine, Alabama Polytechnic Institute, Auburn, February 26, 27 and 28, 1946.

Fractures

Treat all fractures below the knee or hock in young animals. We use yucca board for splints, doubling it upon itself for greater strength in the larger animals. The animals must be anesthetized for treatment. We use nembutal for this purpose. After the fracture



A modified Thomas splint (in addition to the yucca board splint) will prevent the knee from bowing inward

is reduced pad the limb well with absorbent cotton, apply the splint and wrap well with cotton or linen bandage. Paint sodium silicate or liquid glass over this. The splint should extend to the hoof and be wired to the toe. That is easily accomplished by drilling three or four holes in the lower margin of the hoof. This dressing will get messy and have to be changed frequently, by padding with new cotton and replacing the splint and adhesive. The veterinarian should change it the first time, after that the owner can do it if he is instructed carefully and shown how.

The animal should not be permitted to get up while still groggy from the anesthetic. He may injure his leg if he does. Keep him down until the effect of the anesthetic have worn off completely and he will probably take pretty good care of the fractured member.

In a good many of these cases the knee will become bowed inward while wearing the yucca splint. This can be avoided by using, in addition, a modified Thomas splint of the sort commonly used in fracture in dogs. It affords added protection from injury when the animal is lying down and getting up and is well worth while. It should be made of a steel rod one-fourth to three-eighths inch in diameter.

Azoturia

Azoturia is not so common as it used to be but we still find more of it than we like. I use thiamin hydrochloride. 1cc per hundred pounds body weight, or 150,000 units in a 1000-pound horse and, if necessary, repeat on the second and on the fourth day. The results are, I believe, better than with older lines of treatment and it is certainly less trouble to administer than the treatment formerly used.

Laminitis

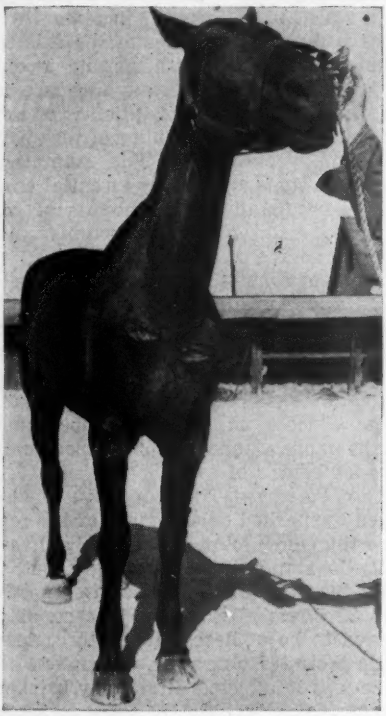
Laminitis is still a problem in horse practice. This condition is the sole survivor of the myriad conditions for which phlebotomy was formerly used. Abstracting up to six quarts of blood in a large horse appears to relieve the pain and to be helpful in lessening the inflammation in the affected feet. It should be

Typical attitude in laminitis, second day of the attack. Note the "tucked-up" abdomen, dilated nostrils and "bench-like" position

followed by forced gentle exercise for a few minutes every hour the first day and for longer distances at longer intervals for two or three days. The injection of normal horse serum and autotherapy, withdrawing from 80 to 150cc of blood from the jugular vein and injecting it subcutaneously, are popular treatments with some practitioners. I like Al-Cara Sal, an aluminum and glycerine preparation, prepared by the Standard Chemical Co. of Des Moines according to formula of Major J. H. Gould, V.C. (retired). Four ounces of this preparation every five hours until eight doses have been given, has given me good results.

Wire Wounds

In Iowa, a land of ubiquitous barb wire fences, wire cuts are common in horses. As all practitioners well know, wire cuts on the legs of horses, and that is where most of them are found, are prone to develop exuberant



Sometimes a wire fence is contacted during night

granulation. This tendency is intensified by aqueous applications. I oppose the use of water on wire cuts in horses after the first washing with hydrogen peroxide to remove the gross filth from the wound. After that I favor McKillip's dusting powder,[1] sulfa-urea powder[2] or barb wire oil.[3] Leave it with the owner to apply. Turning the animal out on grass or weeds when they are wet with dew is extremely conducive to run-away granulation. Caution the owner against this practice. If exuberant granulations develop, a paste made by stirring sulfur into sulfuric acid and spreading it upon the area every two or three days will correct the condition. The sulfur paste should be applied with a wooden paddle and the application continued until the surface of the wound is level with the surrounding skin.

[1] McKillip Dusting Powder: Boric acid, 4%; alum, 27%; iodoform, 0.5%; starch, q. s. 100%.
[2] Sulfa-Urea Powder: Sulfanilamide, 14%; sulfathiazole, 2%; urea, 84%.
[3] Barb Wire Oil: Scarlet oil, 0.35%; camphor, 1.11%; phenol, 1.11%; menthol, 0.28%; thymol iodide, 0.28%; eucalyptol, 1.06%; balsam of Peru, 2.37%; salol, 1.11%; mineral oil, 92.33%.

Atrophy of the Scapular Muscles

Sweeney or atrophy of the anterior and posterior supra scapular muscles still occurs in young horses when they are first put to work and sometimes in older animals.

The injection of turpentine about 0.5cc at eight or 10 places in the sunken area is perhaps the most effective treatment. It is quite painful, though, and the prior injection of a local anesthetic, preferably 2% procaine.

Open Joint

Open joint is a fairly common condition and may be a very troublesome one. Some, of course, oppose injecting anything into the joint. Certainly harsh, irritant disinfectants do more harm than good if they reach the synovial surfaces but we think we get good results from a mixture composed of one dram of tincture of iodine, two drams of phenol and four ounces of castor oil. We inject from two drams to one ounce daily for three days. It should be warmed to body temperature before injecting if the weather is cold.

A light biniodide blister is applied around the external wound daily for four or five days. The owner can apply this blister if the veterinarian does not see the case daily.

Nail Pricks

Puncture wounds of the feet are common. This is a condition that requires careful surgery for which anethesia is essential. The casting harness should be put on the animal and then one to two ounces of chloral hydrate, depending upon the size of the animal, should be injected intravenously. The chloral should be made up in an aqueous solution, two ounces to the quart with one ounce of magnesium sulfate. If the puncture is through the sole, simply remove a portion of the sole. If through the frog a portion of it must be cut away. If the penetrating object has entered the bursa the perforans tendon should be resected. The wound should be sprinkled lightly with sulfanilamide, covered with absorbent cotton then with an ample quantity of oakum, which is made as nearly waterproof as possible by a coating of pine tar. The whole should be covered with a strong metal plate held in place by putting on a shoe or, if that is inconvenient, holes may be drilled in the hoof where shoe nails would be driven and the metal plate fastened with wire. This dressing need not be changed for three or four days and may be left *in situ* until it wears off.

The feet of mules recover from injuries better and quicker than horses' feet.

Disease of Baby Pigs*

APPROXIMATELY 75% of swine mortality (30% of an estimated total annual loss of 40%) occurs before weaning age; hence the logical time to attack the problem of swine losses is before farrowing. Good viability of young pigs, as with the young of other livestock, depends in large measure on the extent to which good management practices are followed. For example, the use of guard rails and pig brooders is an effective yet simple way to reduce losses of baby pigs. Your committee also would call attention to other important factors and diseases that may affect the number of pigs saved.

Healthy breeding stock.—Other things being equal, a new-born litter of pigs has a much better chance of survival if the dam and sire are well grown, rugged and free from disease. There is increasing evidence that brucellosis causes heavy losses of pigs in many herds. At the present time, selling sows and boars for slaughter, as soon as they are determined to be positive to the agglutination test, appears to be the only practical method of controlling this disease in swine. If the animals are not purebred and have no special value, it is usually advisable to sell the entire herd and start over with clean breeding stock purchased from a negative herd. In addition, swine sanitation should not be neglected.

Adequate nutrition during pregnancy important.—Experience has shown that stronger, healthier litters are farrowed if the sows are fed liberally during pregnancy. The ration must contain adequate amounts of protein, carbohydrates and fats as well as certain vitamins and minerals. The need of the pregnant sow for vitamin A and iodine is well established. Feeding about 10% alfalfa ordinarily supplies enough carotene or pro-Vitamin A, especially if new yellow corn is included in the ration. Alfalfa meal or hay of high quality also is a good source of vitamin D. If a small amount of potassium iodide is added to the ration during the last half, or preferably the last 12 weeks of pregnancy, there will be little danger of iodine deficiency. Most commercial protein and mineral supplements contain potassium iodide. However, it can be fed separately with the feed or water. Two level teaspoonfuls of potassium iodide, dissolved in water, and mixed with the grain or added to the drinking water each week furnishes about one gram of iodine per sow per month.

Fairbanks and associates of the Illinois Experiment Station, and other swine production specialists, have shown that adequate nutrition of the sow during gestation is one of the prerequisites of good viability of pigs between birth and weaning age. For example, they have found it is apparently essential that the ration contain adequate amounts of certain fractions of the vitamin B_2 complex. Alfalfa is a good source of these nutrients.

Ketosis of sows.—Symptoms of inappetence, irregular and unsteady gait and rapid loss in weight, together with a positive test for ketones in the urine characterize ketosis of sows. The danger from ketosis probably would be due to agalactia with starvation of the litter. Glucose administered subcutaneously and by mouth appears to be specific treatment for ketosis of sows.

Thick Forelegs.—This condition is characterized by marked enlargement of the forelegs below the elbow joint. Affected pigs have difficulty in standing and moving about. As a result, the pigs usually die from starvation in 48 to 72 hours after birth. The condition is believed to be of hereditary nature, due to a simple recessive character. About one-fourth of the pigs in affected litters may be expected to have thick forelegs if sows possessing a gene for this character are mated to a boar which also carries the same gene. Prevention apparently can be accomplished by using a boar from a different family or strain.

Myoclonia Congenita (jittery pigs).—Clonic muscular spasms involving the voluntary muscles, particularly those of the limbs, characterize this condition in newborn pigs; hence the name myoclonia congenita. A large number of affected pigs recover within six weeks, but mild symptoms may persist in some animals for over a year. Growth and increase in weight are not significantly impaired except in the more severe cases. The cause is unknown. The condition has been encountered in widely separated herds in Illinois but at present it is not looked upon as an important disease of baby pigs in this state.

Pig Anemia.—Pig anemia often is observed in pigs under seven weeks of age that have

*Report of a special committee at the 63rd annual meeting of The Illinois Veterinary Medical Association; Jesse Sampson, Urbana, chairman; Ralph Claybaugh, Brimfield, S. F. Rosner, Stronghurst, R. M. Carter, Alexis, members.

been confined in pens with cement or wooden floors and occasionally in pigs that have access to outdoors if the ground is frozen or covered with snow. Placing fresh sod in the pen or in a box several times each week or painting the udder with a solution of ferrous sulfate will prevent anemia. Pig anemia tablets may be purchased from veterinary supply companies.

Scours.—Scours causes heavy losses of young pigs. It is altogether possible that a number of factors are contributing causes of this disease. Among these may be mentioned changes in air temperature and humidity, chilling, wet, dirty bedding and floors, possibly overfeeding on the part of both the sow and the litter, and perhaps a deficient ration during pregnancy. Veterinarians have found that a number of drugs, some of which are sold under various proprietary names, are useful in treating scours. It is usually recommended that the ration of the sow be reduced for a few days and she be given lime water. One-half ounce of formalin added to the feed three times daily has been recommended. This dosage is for sows weighing about 250 pounds. Ordinary baking soda, blood meal, and still other products fed to the sow also are said to be helpful in checking an outbreak of scours in the pigs.

Swine erysipelas.—Swine erysipelas is now recognized as an important hazard to successful swine production. Vaccinating pigs before they are 10 days old with erysipelas culture and swine erysipelas antiserum has been found a promising method of protecting young pigs against an attack of this disease. More than 100,000 swine have been given the culture-antiserum treatment by Illinois veterinarians. The results show less than 0.5% loss. Application for a permit to use erysipelas culture should be made by each veterinarian to the Chief Veterinarian, State Department of Agriculture, at Springfield.

Parasitic infestation; navel and enteric infections.—These diseases probably do not cause a high death loss but each is an important contributing factor inasmuch as pigs harboring these diseases often become unthrifty, stunted and fail to gain. Many of them succumb to pneumonia or other infectious disease. The McLean County plan of swine sanitation has proved so effective in controlling these diseases that all swine producers should be induced to adopt this method.

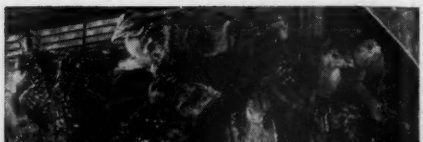
Baby Pig Disease (Acute Hypoglycemia of newborn pigs).—All litters of newborn pigs should be carefully watched during the first 72 to 96 hours after farrowinng for evidence of inappetence, apathy and lowered vigor. Pigs that show these symptoms should receive prompt treatment. The administration of glucose to such pigs may prove beneficial. As there often is stasis or paralysis of the intestinal tract in affected pigs, the results of glucose therapy will be most effective when the sugar solution is injected intraperitoneally. Some veterinarians inject 5cc of 50% glucose two or three times daily to all pigs in the litter. The litter is left with the sow and injections are discontinued as soon as the pigs are out of danger.

Clinical observations appear to indicate that the major share of baby pig disease is the result of agalactia in the sow. Glucose treatment, preferably by injection, is often helpful in these cases. It may or may not prove helpful in pigs that have a full stomach. It might prove worthwhile to milk out a part of the milk by hand from sows that produce an unusual amount during the first day or two after farrowing. After this is done, the litter should be allowed to nurse. This may not prove to be a practical procedure in large herds or in herds where the sows are difficult to handle. However, a number of experienced swine producers resort to this.

Sows should be fed well during pregnancy. The major share of baby pig disease is the result of agalactia in the sow

Feeding Orphan Pigs.—Some veterinarians recommend that cow's milk be enriched with cream, others recommend that straight cow's milk be used, while still other veterinarians believe that it is advisable to dilute cow's milk with a little water for orphan pigs. A number of veterinarians also recommend that a little syrup be added to cow's milk. Irrespective of the plan that is followed, it is well to remember that baby pigs should be fed at frequent intervals during the first few days after farrowing and the amount of milk kept small at each feeding. Otherwise digestive disturbances and scours are almost certain to develop.

Poultry Practice



"DOES poultry practice pay?" This question is often asked by veterinarians. Those who have tried it seriously say it is as remunerative as any other branch of general practice. In a typical rural practice which includes the treatment of all farm animals including the pets and poultry of farm and small-town families, giving the flocks the same attention as the other livestock, pays as well for the time required as any other type of practice. The fees for treating poultry are essentially the same as for treating other livestock. It probably pays poultry raisers better because, without veterinary service, the losses in poultry from disease are proportionately greater than in other farm animals.

As everyone knows the poultry industry sustains an enormous loss from disease. The meager and incomplete statistics available on poultry disease indicate that after the birds go into the laying house, the mortality has been about static at 18 to 25% during the laying season for the past few years. It is doubtful, however, that the record of many farm flocks are included in these statistics. Even so, the loss is a crippling one to the industry, and something should be done about it.

The loss from disease in baby chicks and up to laying age appears to be increasing. Veterinarians can prevent a great deal of this loss by rendering the poultryman the same kind of service that they supply for the swine raiser or dairyman. They can do it at a profit to themselves and to the flock owner, and to the very great advantage of the poultry industry, to which the problem of disease now poses a struggle for survival.

There are three types of poultry flocks and each demands its own particular requirements for veterinary service. (1) The ordinary farm flock that exists on nearly every farm and accounts for an appreciable part of the farm income and supplies a considerable part of the home raised food for the farm family, (2) two types of commercial poultry flocks. One type is managed by poultrymen who are not well informed as to the best methods of poultry raising and, generally, their facilities and equipment are inadequate in amount and quality for the number of birds they try to maintain on their premises. The other type of commercial flock is maintained by well informed, experienced poultry producers. Usually, the latter type has facilities adequate or nearly adequate for the size of his flocks, have good equipment and employ good methods.

When a poultry disease problem is presented to a veterinarian and a diagnosis made, he must at once decide what service the owner desires. If he is the owner of an ordinary farm flock, he is probably interested only in having the current outbreak of disease treated, i.e., he is interested only in treatment of the flock for the malady then present. If the disease is in one of the poorer type of commercial flocks, the owner wants the flock treated, of course, but he also wants the disease controlled so that his losses will not be greater than he can endure and still remain in the poultry business. The owner of the high-class commercial flock wants treatment and control and, even more, desires the eradication of the disease from his premises and measures instituted to keep his flock free from the disease. He is coöperative to this end and, within the limits that he can afford, is willing to extend his facilities, modify his buildings and change his methods. His problems will test the veterinarian's knowledge of poultry husbandry as well as his veterinary skill and resourcefulness.

Pullorum Disease

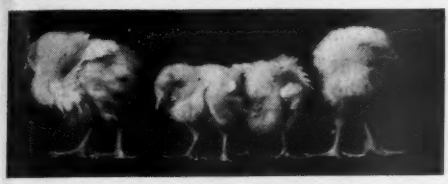
Usually, the first notice a practitioner has of an outbreak of disease in a poultry flock is when the owner brings to his office one to several sick or dead birds for examination. He always has a lot of questions to ask, but it is well to get him to answer some questions first. If the trouble is in baby chicks, before attempting to answer the owner's questions the veterinarian should ascertain:

1. From what hatchery did his chicks come?
2. When were they hatched?
3. When did he get them?
4. How long were they on the way?
5. How many were there in the lot?
6. When did the first one die?
7. How many are dead now?
8. Were they chilled when he received them?
9. Have they been chilled since received?

*Notes from a general discussion at the 40th Annual Meeting of the Mississippi Valley Veterinary Medical Association, Galesburg, Illinois, November 15-16, 1945.

10. What symptoms have been noticeable?

With this information and a necropsy or two, a diagnosis can often be made without a visit to the farm. A veterinarian doing poultry practice soon becomes familiar with the type of chicks supplied by all hatcheries that serve his district and knows about how long shipments are enroute from each of them. All



Pullorum in young chicks

hatcheries start the season with a small loss from pullorum disease but, in the chicks from nearly all of them, the loss from this disease increases steadily throughout the season, as batch after batch are hatched. The increase is not uniform among the hatcheries. The disease increases faster in the chicks from some hatcheries than from others. It depends on the care the hatcheryman uses in the selection of eggs for incubating. Only hatcheries that get all their eggs from "pullorum clean" flocks (usually their own flocks) experience no increase in the disease as the season advances—but there are very few such hatcheries.

Since baby chicks are shipped varying distances, they spend different times enroute to the poultry farm and that affects mortality. Other things being equal, the longer a shipment is enroute, the higher the mortality from any intercurrent ailment.

Pullorum disease is the most prevalent ailment of baby chicks in the mid-western section. It is the only disease that kills 15 to 20% of a flock in a single night. If a man has lost 50 to 70 chicks out of a batch of 350, the night before he seeks veterinary air, it's pullorum and the loss will be 90 to 100% before the disease has run its course. There is no use to make a call to see the flock; no use to give the owner any medicine for his chicks. So far as that batch is concerned, he is out of the poultry business and doesn't know it. The only thing for him to do is, to dispose of the remainder of that batch of chicks, clean up his brooder house and get a new batch of chicks. If he wants to get others from the same hatchery and the veterinarian knows that pullorum losses have been running heavy among other poultrymen receiving shipments from that hatchery, he should be advised to have them brooded at the hatchery and shipped to him later. Chicks that can be brooded at the hatchery with a pullorum loss of 7 or 8% will suffer a loss of 70 to 80% when brooded after a 24-hour shipment, if they are chilled on the way as they are quite apt to be.

If the loss hasn't been so severe, say three to eight or 10 chicks out of a batch of 350, have died daily for the past three or four days, it is worth while to attempt to save them. Usually, this will call for a visit to the farm and inspection of the facilities, conditions and methods. The chicks must be kept on a well insulated, dry floor. The temperature of the brooder should be raised to 90 to 95° F. The chicks should be supplied with plenty of clean fresh water and nothing should be put in it. Baby chicks are just too delicate for chemotherapy. If the poultryman has a bottle of medicine which the hatcheryman has sold him to put in the water, if anything goes wrong with the birds, tell him he got his chicks from the wrong hatchery—the hatcheryman was expecting trouble. At the first sign of pullorum disease, ailing chicks should be removed from the brooder and disposed of in a sanitary manner. Managed in this way, if the weather is clear and sunny, the batch may do pretty well, if the weather is rainy and dark, the loss may be 50%.

Colds and Coryza

Colds and coryza are common during the winter season. They present a different prob-

Edema of the face, comb and wattles resulting from coryza

lem. It is not sufficient to make a diagnosis from two or three dead birds and supply the owner with a bottle of medicine. These ailments call for a visit to the farm to locate the over-crowding. Probably there was sufficient space for the chicks when they were

small, but now that they are three or four times as large, there is insufficient room. A dry floor must be contrived and good ventilation installed. The well chicks should be removed to new quarters. Put an iodine combination in the drinking water of the well birds. Some make a stock solution of six ounces of hyamine in a gallon of water and then use one-half ounce of this solution to the gallon of drinking water. If the birds are older and in production and the volume is away down, use this drinking solution also to wet the mash. If it is thought to be worthwhile to treat the sick they should receive this same medication.

Fowl Pox

Fowl pox varies greatly in prevalence from year to year. The years when it is prevalent, it comes with a bang. Treatment of the ailing birds is of little value but vaccination of the flock is indicated and *right now*. Fowl pox spreads rapidly when it's on rampage and a

Restraint of a fowl for vaccination. The vaccine may either be rubbed in follicles where feathers have been plucked or the "stab" method may be used

delay of even a day means many new cases. Chicken vaccine should be used if the birds are not in production or only at the beginning of production. If 20% or more of the flock is in production, pigeon vaccine should be used.

The vaccination should be carried out methodically. Three helpers should be supplied to catch the birds, bring them to the veterinarian and hold them for vaccinating. If the owner is not willing to supply three helpers, tell him pointedly one is too busy to do his work. Little can be done for a poultryman without his full coöperation and it is best for him to understand at the outset that unless one has his complete coöperation, one does not desire his patronage.

The owner of a flock in which there is an outbreak of fowl pox is certain to want the ailing birds treated. If only the wart-like type is present, they do pretty well if the iodine combination already referred to is added to the drinking water. If the lesions are in the mouth, it should be used to wet the mash. It

Typical foml pox eruptions (natural infection)

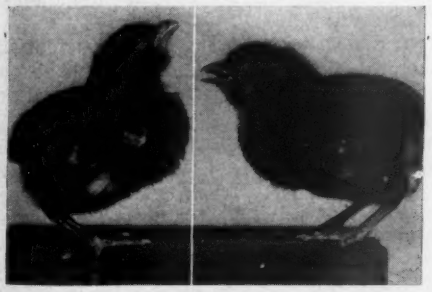
is difficult for these birds with mouth lesions to eat dry mash. If they can be induced to eat wet mash, the egg production won't drop so much. The iodine apparently does many of these birds some good. However, the owner is going to give them medicine. If the veterinarian doesn't supply it, someone else will and, in the latter case, some harmful irritant may be administered.

Laryngotracheitis

Laryngotracheitis is another disease that hits the poultry flock hard and quick. Vaccine is successful in preventing laryngotracheitis, but it takes 10 days to afford protection and that is too slow in the presence of an acute outbreak.

Different outbreaks differ in severity. If 20 to 30 birds die the first night the type is a severe one and most of the birds will die regardless of treatment. However, if the deaths have been few, and four or five have been gasping for two or three days when the veterinarian is called, it is possible to save practically all of the flock.

The temperature of the poultry house should be raised to 80 to 85° F. and the air should be sprayed several times a day with water to keep the humidity high. The lights should be kept on most or all of the night to keep the birds awake and moving around as much of the time as possible. Affected birds usually die, not from intoxication, but from suffocation. If they sleep for several hours, the air passages fill up and they smother. They should be given a mash wet with iodine solution. Iodine favors liquefaction of the exudate and facilitates clearing it out of the air passages.



Laryngotracheitis in baby chicks

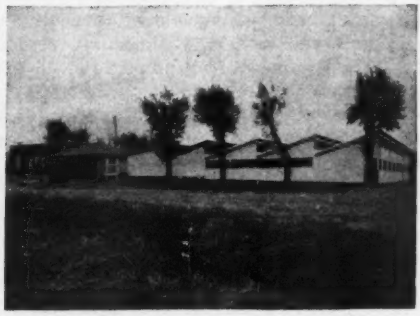
Infectious laryngotracheitis: Above, attitude during inspiration; below, attitude during expiration.—From Calif. Agr. Ext. Circ. 8

If the disease is mild at the start and the spread is slow, one should vaccinate immediately and keep the lights on.

The virus of laryngotracheitis doesn't live long outside the body of the living bird so cleaning and disinfecting contaminated premises offers little difficulty.

Fowl Cholera, Fowl Typhoid

Fowl cholera and fowl typhoid are two diseases that the investigators say the practitioner can't do anything about, but he can. Did anyone ever hear a practitioner tell a research man that the investigation of a given disease was useless; that he couldn't learn anything about it by research? On the other hand, has anyone ever seen a research man



Keep exposed flocks in good houses and keep the floors dry

that couldn't tell a practitioner just what he can and what he cannot do?

The treatment of fowl cholera and fowl typhoid are the same except for the biological product used.

First, kill all affected birds as soon as detected and dispose of the carcasses in a sanitary manner.

Keep the exposed flock in a good house and put sanitation into high gear and keep it there.

Keep the floor dry. Remove dropping as fast as possible. Keep the feed and water vessels clean. Remove the feed that is left every six hours and clean the vessels thoroughly. Scald the water vessels at least twice a day.

In fowl cholera use a bacterin. It won't control every outbreak but more often than not, it does a lot of good.

In fowl typhoid vaccinate the unaffected birds. The vaccine is a valuable agent, but it takes a little time to increase the resistance of the birds.

Bichloride of mercury should be added to the drinking water for both diseases. Put one ounce of mercuric chloride in an eight-ounce bottle, add two ounces of hydrochloric acid,

then four ounces of alcohol, and water to fill the bottle, color and label poison. Add a tablespoonful of this solution to the gallon of drinking water. If the water is kept clean,

Fowl Typhoid

i.e., if water visibly fouled is removed immediately and the vessels washed and scalded twice daily, the mercury preparation will prevent infection via the drinking water.

Of course, a poisonous solution should be colored. Because of accidents that may happen, one should never dispense a poison that looks like water. For fowl cholera, color the disinfectant with carmine and for fowl typhoid with methylene blue. In case of a later outbreak, one may have forgotten the identity of former disease. The owner may not remember either. But he will remember the color of the medicine he used and this is a key to the malady.

Coccidiosis

It is well to remember that weather conditions affect materially the outcome in coccidiosis of chickens. If it is warm and dry, they will do well; if wet and rainy, treatment is less effective.

If weather is rainy treatment of coccidiosis is less effective

A first requisite in handling coccidiosis is to move the birds to clean ground every three days. Theoretically, that should be all that is necessary, but it isn't.

Feed whey and powdered buttermilk and growing mash. Keep them on the milk a half-day and then on the regular feed a half-day, and remember that chickens with coccidiosis will drink three times the normal amount of water. See that they have sufficient water available at all times. As an intestinal astringent, to prevent excessive loss of blood, add four ounces of potassium dichromate to a gallon of water. Label poison and add one tablespoonful of this solution to the gallon of drinking water.

If the birds are anemic, add one-twentieth of a grain of sodium iodide and about one drop of tincture of ferric chloride per bird per day to the feed.

There has been little satisfaction from the use of sulfa drugs in coccidiosis. The birds live but just make a lot of culls that eat feed which should go to thrifty birds. The owner would have been money ahead if they had died. Some of the research men can make coccidiosis roll over and jump through a hoop with various of the sulfa drugs but so far they have made no reports on the egg production records of the survivors. Hens go out of production after a few doses of the sulfonamides and sometimes require six weeks to get back into production. Long before that the poultryman is fit to be tied.

There are some cases where powdered sulfur is very useful in coccidiosis. An example is where the birds are kept on hardware cloth. It is a difficult, disagreeable task to clean the manure from under the floor. It accumulates, stinks to high heaven and attracts a million flies. If it is sprinkled with sulfur daily it keeps down the odor and keeps the flies away. In fact, it is a good plan to use sulfur whenever chickeens are kept on sun porches, whether or not they have coccidiosis. Where it is not feasible to move chickens with coccidiosis to new ground sprinkling the pens heavily with powdered sulfur everyday is the next best thing. Spraying with a strong salt has a similar but less pronounced effect. Maybe because birds dislike the taste of both the sulfur and the salt, they are less inclined to pick up infection from soil which is impregnated with either or both.

Veterinary Practice—II

By E. T. BAKER
Moscow, Idaho

Location

I HAVE mentioned elsewhere in my autobiography what may constitute a good or a poor location, and how vital this problem is to future success.

There are about 10,000 cities and towns in the United States with a population of 1000 or more. There are some urban communities of less than a thousand people, surrounded by a good farming country, eligible to be classed as "good."

One prime factor is to have enough clients financially able to pay for expert assistance, and who will pay for the call. Indigents are inclined to call one at the slightest pretext for they know they will not be expected to pay much, if anything.

Thus, Doctor A living in a good town makes 1,000 calls and receives $5,000 cash.

Doctor B located in a poor town, also makes 1,000 calls, but receives only $3,000 in rattling or folding money.

Now, Doctor A has performed no more actual work than Doctor B, and his expenses are no more, but we can easily see the difference in the net incomes.

In the course of years, Doctor A may be worth $25,000 to $50,000 dollars, while Doctor B will still be living in a rented house, with the wolf only a few feet from the back door.

The town has grown up around our home which is just a block from the center of town

In some localities there are too many practitioners for the work to be done, and so none of them has a good income. Because one man has prospered in a certain town, it does not follow that two can thrive.

We see this condition among small businesses, such as grocery stores and the like, and the mortality is great when the community simply cannot supply sufficient income to maintain all of them.

The question of location, is, therefore a vital one, and may determine ones entire financial career. Of course, one can always move, but this is expensive, and a new start takes just that much more out of one's earning years.

The Homesite

In looking back over my own personal experience, I can see why so many practitioners choose poor locations for their homes or offices. When one is young, he overlooks many important factors that may cause a serious depreciation in the future.

For this reason, a good location is often a matter of luck rather than superior wisdom. It is much like the fellow who took in some land on a bad debt, and later discovered it overlaid a pool of oil. It may be compared to hitting the jackpot on a slot machine (so I have heard).

My wife and I had lived in our present town for two years before deciding to purchase a lot and build a home. Remember, this was in 1914, when our burg had only 3,500 people in it, and most of the streets were unpaved. Automobiles were just beginning to appear. It is the site of the state university, and only 10 miles distant from the Washington State College.

It might be interesting to relate two versions of how Moscow received its name. There is no extra charge for them.

No. 1. One of the first settlers was a Russian, named Stephanovich, commonly called Steffen. He became the first postmaster of Paradise Valley, and he wanted it changed to Moscow, in memory of his Russian home city, which was done.

No. 2. One of the eearly settlers had an old cow named Moss. People began to call her the

No. 2. One of the early settlers had an old cow named Moss. People began to call her the "Moss Cow," and a new name for a westeren hamlet was born.

My wife and I walked over the entire town, for we had no car then, and finally decided upon our present location, in which we have

lived for 30 years. We built our home in 1915, and now the town has grown up around us. We are only a block from the center of town, but on a side street, which has since become a secondary artery for traffic.

Living close in, I have never had to maintain an office down town, and at even the low rent of $25 a month, it would have cost me more than $9,000 in rent since we built our home. During the depression years, when money was almost non-existent, we were not worried about rent. We had our home paid for, and could live on a reduced income.

Various Problems

Choosing a homesite or a location for a hospital is largely an individual problem. In my travels, I have seen very good ones and some poor ones. Time plays an important role. A practice changes, and what may be a good location today may be obsolete in 10 or 20 years. What is the best residence section in a city today may be a factory district or a blighted area 20 years hence. A fine small animal hospital on a prominent highway may be on a back road in a decade, when a new super-highway is built.

Perhaps, in the future, practitioners will use cub helicopters, and build small landing fields instead of garages. Nothing is too fantastic for this age of changing scenes, and about the only way to keep up with them is to change also. In the large cities, suburban neighborhoods now have stores that thrive because of the parking problems down town.

Location Suggestions

Since a large percentage of practitioners live in small country towns, we would offer the following:

1. Live in an easily accessible location. Farmers like to drive into town, park their cars near the center of business, do their shopping, and then stop at the veterinarian's on their way home. If one lives where he can be reached without too much trouble, it is remarkable how many farmers will stop to make arrangements for future work, or pick up a little medicine.

2. Arrange, if possible, the driveway in a semi-circle, so that the cars can be driven off the street.

3. Select a corner lot because it is easier than an inside one for the stranger to find. Arrange the garage so a car can be driven in one door and out the other without backing into the street.

4. Combine office, garage and house so that all can be heated from one furnace.

5. Build a brick house, if possible. It will cost more than a frame house, but future paintings will be avoided. A frame house covered with asbestos shingles saves heat.

6. Secure a not-too-large lot as better for the average practitioner. Remember the rule: "A lawn should be no bigger than the wife can mow." A kind and devoted husband never allows his wife to chop wood with a dull axe, either. Jokes aside, there are times in the practitioner's life when he has no time for working around the house or office.

7. Keep office and home neat and clean. Veterinarians are judged by external appearances, and clients like to deal with an apparently prosperous person.

8. Figure on the office rent charged up to the home just about sufficient to keep up repairs and depreciation.

9. Do not live in a home that is too expensive to keep up. We have in mind an old friend of ours who moved into a beautiful home, far too elaborate for his circumstances. Between trying to keep up his practice and this home he wore himself out, and became seriously ill. He had to give up his home, and move to an apartment, and worried so much about his future the Angel of Death mercifully removed him from this vale of tears. Had he started in on a more modest scale he might be alive today.

10. Begin slow, and gradually build up. Always figure on your expenses being twice what you expect, and your estimated income just half what you think it will be. Using this system of mathematics, which I learned from Mother Experience many years ago, will enable you to just come out about even. And I don't mean even like Jack Gilroy. He claimed to be about even financially because he owed just about the same number of persons in his town that he didn't owe.

11. Carry full insurance coverage on car, home, and as much life insurance as circumstances justify. To be protected in this way will save worry, and it teaches one to save. I know I have paid premiums on insurance with money that otherwise would have disappeared without a trace had not the premiums come due.

12. Fit a room up for a private den or office —it helps to make life more pleasant and comfortable. Here, one can sit down and really enjoy life. Many practitioners spend too much time and money away from home, because they have no privacy in their homes.

A thoughtful wife can arrange this kind of a place, just as a husband can provide his wife with the labor saving devices needed.

Children can be taught to respect this room of Dad's, so that he can always find what he wants without looking too much for it.

(To be continued)

Clinical Reports

S.P.C.A. Aids in Rabies Control

The Department of Valle del Cauca, Colombia, had been free from rabies for a considerable period when in January, 1946, the disease suddenly appeared in Cali, the principal city in the Department. Within two months 34 dogs, 50 cattle and one person died of the disease.

In instituting measures for the control of this disastrous outbreak of rabies there was complete cooperation of the health department (Centro de Higiene de Cali), the local veterinarians and the local organization of the Society for the Prevention of Cruelty to Animals. The Principal reliance for control was upon antirabic vaccination. The vaccine was manufactured by Laboratorio Nacional de Higiene Samper-Martinez in Bogotá, supplied by the health department and administered by the local veterinary practitioners.

The S. P. C. A. handled the publicity among dog owners and provided centers for the assembly of dogs for vaccination. As a result of this cooperative effort 5,743 dogs were vaccinated during February and March, and Cali is again free of rabies.

Cali, Colombia — JOSE GONZALEZ ALVAREZ

Carcinoma of Eye in a Hereford

November 30, 1945, a six-year-old, Hereford cow was presented for treatment. She had a growth on her left eye which was attached to the cornea and sclera with no involvement of the eyelids.

The cow was put upon the operating table, in lateral recumbency and the area around the left eye was shaved, cleansed with soap, rinsed and swabbed with a 1 to 1000 alcoholic solution of bichloride of mercury. The skin, eyelids and the eye muscles were then infiltrated with a 1% procaine hydrochloride solution. After a period of 10 to 15 minutes, the eyelids were sutured together with umbilical tape using a continuous suture. This was done to facilitate traction during the dissection. An incision approximately one half inch from the margins of each lid was then made and these were united beyond each canthus. The conjunctiva was carefully dissected out and the ocular muscles were dissected back to near their origins. A pair of curved scissors was used to sever the muscles and the optic nerve. Then the eyeball, conjunctiva and resected ocular muscles were removed from the orbit, and the cavity packed with cotton to control the hemorrhage. Interrupted sutures of umbilical tape were started at the lateral canthus; the sutures were placed one-half inch apart. As the suturing neared completion at the medial canthus, the saturated cotton pack was removed and gauze impregnated with camphor antiseptic was placed in the cavity. At the medial canthus, the end of this gauze pack was permitted to protrude slightly to facilitate removal later. In addition about one inch of the skin margins at the medial canthus was not sutured to permit drainage.

The cow was then allowed to get up and was put in a box-stall. After an interval of 48 hours, the gauze pack was removed and six days later the sutures removed. After removal of the sutures, the cow was discharged from the clinic. The case described was one of six seen in cattle during the same week and was the only one in which the eyelids were not involved.

JOSEPH SIMON

Duanesburg, N. Y.

Hermaphrodism in a Horse

Four years ago an elderly couple, breeding palomino horses, had a foal of excellent conformation and a beautiful golden red color dropped on their farm. For three years they believed that it was a mare. During this time it claimed all the foals that were dropped on the farm. Due to deaths in the family the animal was sold to a neighbor. Shortly after being moved to its new home, it began to act

up, especially when near stallions or geldings. The horse was very gentle, an excellent saddle animal up till last year when it became untrustworthy if other horses were near.

When presented for examination it was ex-

ceptionally easy to handle and, on elevation of the tail, it was observed to be a hermaphrodite. There was a slight crest to the neck. The udder was fully developed, but there was no scrotal development. On rectal examination an immature uterus and broad ligament was discovered. The ovaries were extremely small, if present, as they were not located. The vulva had not opened, presenting a "sutured appearance." A very short penis, extending from the pelvis to the lower lip of the vulva was present. The head of the penis just protruded so that it was readily visible. Very small testicles were located just inside the external inguinal rings.

When near other horses, and mares in heat, the animal would have an erection which merely raised the glans penis about three-quarters of an inch upward. It was continually wanting to fight stallions, and killed at least one.

The animal was anesthetized with a chloral hydrate-magnesium sulfate mixture, and the testicles removed from the inguinal canals. Tetanus antitoxin was administered as a precautionary measure. The animal made the usual recovery and it is expected that with the usual atrophy of the penis in such cases, the animal will shortly look much like a mare. The illustration shows the external genitals of this animal just before the operation.

A. A. DAVIES

Linden, Mo.

Pneumonia-Enteritis Complex in Baby Pigs

The morning of May 10, 1946, I was called to a farm in the vicinity of Grant Park, the owner of which stated his pigs were dying of hog cholera.

History.—The pigs, having been divided into two groups, were on rich alfalfa pasture with a fence separating the groups. Group A, comprising originally 80 pigs, were nursing the sows on the new pasture. The owner, fearing that there was not enough milk to go around, separated approximately 25 pigs (Group B) from these litters (they then being three and one half weeks of age) and turned them onto the new pasture. He was feeding them a buttermilk mixture. The typical history was that a few pigs of this latter group would become very dull and listless, drag on for 36 to 48 hours and succumb. The owner's theory was that they were dying of cholera because they were no longer nursing their immune dams.

Symptoms.—When I arrived, the weaned drove had dwindled to 12 pigs, or one-half the original number. The unweaned group had lost but very few. Upon examination of the drove, all pigs were found to be active, no depression whatsoever being observed. Temperatures ranged between 105° F. and 106.5° F. Intermittent coughing was noticed in many members of both groups. Evidence of scours was also present.

Pathology.—A post-mortem examination disclosed a decided gastroenteritis and pneumonia. Residues of the buttermilk ration was found along various sections of the gastro-intestinal tract and there were impacted masses of alfalfa near the termination of the bowel. During the necropsy, the owner had peered over the carcass, and to my surprise, asked as to the presence of petechiae. He admitted that familiarity with hog cholera over the past few years had extended his vocabulary.

Diagnosis.—The owner was informed that pigs weaned at such an early age, could not properly assimilate the diet he had supplied for them. Therefore, there was a lowering of resistance, which had permitted a "mixed infection" to set in. After establishing themseves in the drove, the organisms had become more virulent, thus more and more losses in both groups of pigs. Hog cholera was ruled out by the clinical syndrome and absence of lesions observed at necropsy.

Treatment.—As the coughing, sporadic diarrhea and fever had seemingly spread from the weanlings to the sucklings, all the pigs on the premises were given di-sulfalac intraperitoneally, 1cc per pound of body weight and 2cc of mixed bacterin porcine, number one, subcutaneously. A tasteless guaiacol compound was dispensed to be added to the drinking water. As the weather had suddenly changed a carefully qualified prognosis was given.

Late that same evening, on a return to the farm, an examination of the drove revealed a general temperature range of 102° F. to 103.5° F. One weaned pig was comatose with a temperature of 96° F. and very dyspneic. Euthanasia and necropsy revealed the same changes as were noted previously.

On calls to the farm on each of the next two days no other untoward symptoms were discovered and, to the present writing which is three weeks later, not another pig has been lost.

E. L. ADLER

Grant Park, Illinois

Abnormal Vas Deferens Constricts Intestine in Steer

A grade Hereford steer about one year of age and in fair condition was presented for treatment Monday afternoon, Dec. 3, 1945. According to the owner, he had been receiving a fair maintenance ration but since the preceding Wednesday had been off feed and showing considerable bloat.

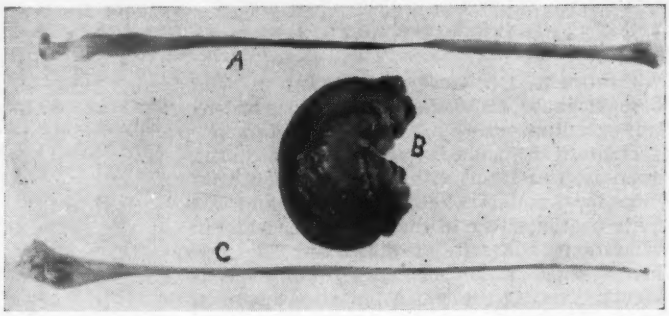
Upon rectal examination no feces were found in the rectum but a sticky mucus exudate was observed. The rumen was somewhat distended but the greatest tympany was in the intestines. No abnormalities could be palpated that might suggest the cause. The steer was showing some distress.

A tentative diagnosis of intestinal obstruction was made with the decision to do an exploratory laparotomy. The laparotomy was delayed until about seven o'clock p. m. The right paralumbar fossa was shaved and prepared for the operation. The area was infiltrated with a 2% procaine solution. The steer was in sternal recumbency for the operation because he was unable to rise.

In exploring the abdominal cavity a tight cord was felt in the right inguinal region. Further exploration revealed that the cord incarcerated a portion of the small intestine. The intestine was brought out as far as possible through the incision, the strangulated section removed and an anastomosis completed.

The steer had bloated more while the operation was in progress and, due to the increased tympany, the abdominal incision could not be closed satisfactorily. At this time, due to the condition of the animal, euthanasia was performed.

Post-mortem examination revealed abnormal vasa deferentia. They were enlarged and elongated, measuring one-fourth inch in diameter and 16 inches in length. Also there was no evidence of a genital fold enclosing the vasa deferentia, except near their posterior termination in the urethra. This left them free in the abdominal cavity. A dark colored portion about four inches long clearly indicated the right vas deferens was the "cord" palpated through the laparotomy. The intestine involved in the incarceration was a portion of the ileum about four inches from the caecum (See illustration).



A—Right vas deferens showing discolored portion

B—Loop of intestine removed showing groove made by vas deferens

C—Left vas deferens

No theory is advanced for the condition found in this steer.

PAUL J. LINDSEY

Willacoochee, Ga.

Sporadic Meningitis in a Heifer

July 19, 1945, I made a routine call to one of the larger dairy farms in our vicinity* to examine and treat a cow for partial prolapse of the vagina and while there—was asked to examine a ten-month-old, Guernsey heifer which that morning became ill suddenly. The heifer was in very good condition and was one of four in a line ranging in age from eight to twelve months. All were receiving the same feed and care.

The heifer was recumbent and, at my suggestion, she was moved from the stanchion to a maternity pen and in the process of moving her, the right horn was torn off. The history obtained was not informative, in that it was not known whether the animal had been sick during the night. In the morning, she was the only animal to refuse the grain and hay ration when it was offered. The owner noticed that she had trouble maintaining her balance and seemed very unsteady on her feet. On several occasions, she went down but would regain her balance. Finally she collapsed completely and, while on her side, exhibited running movements in an attempt to get up.

Examination revealed complete collapse, marked constipation, and extension of all limbs. The head was arched backward and drawn to the left. The pupils were widely

*Doctor Brooks was practicing in Brunswick, Me., when this case was treated.

dilated and the corneal reflex normal. There was no response to needle pricks over her body and all body muscles were held in strong extension. It was almost impossible to flex her legs. A chart was kept of the pulse, temperature and respirations as follows:

Date	Pulse	Temp.	Resp.
July 19	130	101.5° F.	80
July 20	140	103.0° F.	48
July 21	126	103.5° F.	60
July 22 10 a.m.	138	104.0° F.	40

Treatment consisted of 250cc of calcium borogluconate, intravenously, and 2.5cc of lentin, subcutaneously.

The next day showed no improvement in the animal's condition with the exception that some fecal material had been passed and was quite characteristic in that it was rock-like in consistency and slate-gray in color. The sudden spasms of the legs and running movements were still present. A tentative diagnosis of encephalitis was made and 100cc of sterile sulfanilamide solution (5%) was given intravenously along with 250cc of calcium borogluconate, and 2cc of lentin was given subcutaneously. I notified the owner that the prognosis was grave and decided to use pencillin, even though its efficacy in brain and spinal cord disturbances is doubtful. I administered 50,000 units of the drug intramuscularly at 8:30 p.m., 11:30 p.m., 2:30 a.m., and 5:30 a.m.; a total of 200,000 units. The heifer showed no improvement whatsoever and her temperature increased in spite of the penicillin. I enlisted the aid of Dr. B. Dionne and, after examining the heifer, he corroborated my diagnosis of encephalitis.

A blood sample was taken and 100cc of sulfanilamide solution was given intravenously and another blood sample was taken. With the coöperation of Maurice Dionne, M.D., we tested the blood for its sulfanilamide concentration and found it to be 7mg per 100cc of blood before the second injection of sulfanilamide solution had been given. The blood sample taken immediately following the administration of the second portion of the sulfanilamide solution proved to be worthless in that we could not test it properly.

July 22, the heifer died and the brain was removed and packed in a formaldehyde-alcohol solution and sent to Dr. Maurice Dionne for a pathological study. The results of his study follow:

Date Received 7/31/45
Date Reported 8/7/45

Specimen Brain from Guernsey heifer, aged 10 months

Clinical Diagnosis: Encephalitis

History:

The specimen consists of brain tissue, very friable, and ragged. It measures approximately 15 x 10 x 9cm. The dura has been in part removed and in part torn away from the brain. Multiple sections reveal several small areas of hemorrhagic discoloration of petechial nature and found apparently in the gray matter.

Microscopic examination: Three sections of brain, from cerebral cortex, basal ganglia, and walls of ventricles, show venous congestion and capillary bleeding into the perivascular spaces. There are very small areas of infarction with secondary resorptive (mononuclear leucocytic) meningitis. There are areas in which nerve cells show "acute shrinkage," and there are areas of intercellular edema.

Diagnosis: Mononuclear meningitis with probably encephalitis.

Julius Gottlieb, M.D., F.A.C.P.
Pathologist

Discussion

I have given a great deal of thought to this case. From the beginning I suspected listerellosis, but did not venture to diagnose the case as such because that condition has never been reported in Maine and also because there were no symptoms characteristic of listerellosis. When packing the brain for shipment, it was impossible to prevent contamination of the specimen and so I did not ask for a bacteriological study. The report of the microscopic study is strikingly similar to other studies which have been carried out on positive cases of listerellosis as reported by Udall, *et al.* In my own mind, I am fairly certain that this was a case of listerellosis.

I wish to express my sincere appreciation to Dr. Bert Dionne and to Maurice Dionne, M.D., for their interest and help and also to Dr. Julius Gottlieb who so graciously performed the pathological study.

EUGENE I. BROOKS

Hatboro, Pa.

Post-Partum Hemoglobinuria

A call was received to treat six-year-old, milking shorthorn cow, one week after she had calved.

She was greatly emaciated, had a staggering gait and a temperature of 95.6°F. All of her uncut mucous membranes were yellow. She was also passing a lot of blood in the urine.

The diagnosis was postpartum hemoglobinuria.

I gave her intravenously 500cc calcium gluconate solution reinforced with magnesium sulfate and 500,000 units of vitamin A and 132,000 units of vitamin B, twice daily for six days. She made a very satisfactory recovery.

I have had two other cases that were very similar to the foregoing.

GEO. A. MORRISON

Great Falls, Mont.

Diabetes Mellitus in an English Setter

A six-year-old, English setter bitch was brought to me for examination. According to the history, she had first showed symptoms of illness, including an attack of vomiting, four months previously and was treated for poisoning. Since her illness this bitch had been drinking large amounts of water, and had lost weight continually even though her appetite was good and, at times, voracious. The dog had been wormed and given a wide variety of tonics with no apparent benefit.

She weighed about 55 pounds before her illness but when brought to me tipped the scales at 18 pounds; being almost literally "skin and bones." Any slight exercise tired her to the point of exhaustion. The accompanying illustration shows her condition. The two arrows at the neck show the relative loss of weight as, normally, the collar fit snugly around her neck.

A complete check of the urine, feces and blood was made. Microscopic examination of the feces revealed no eggs of intestinal parasites and the blood was negative for heartworms. However, chemical analysis of the blood and urine proved very interesting. Both showed a very high sugar content, the urine containing about 7%; the blood glucose being 488mg per 100cc of blood. A diagnosis of diabetes mellitus was made and the owner advised that daily injections of insulin and the proper diet might possibly result in a remarkable improvement and prolong the dog's life for years, besides being very interesting from the veterinary medical viewpoint. However, much to my disappointment, the owner decided upon euthanasia for the dog. Permission for an autopsy was given. The organs, both macroscopically and microscopically, showed a typical picture of diabetes.

Diabetes mellitus is rarely reported in the dog. We may be missing some cases.

LOUIS L. VINE

Chapel Hill, N. C.

Necropsy on a Bull

December 19, 1945, a necropsy was held on a Holstein-Friesian bull. This bull had been idle for a year. He had been leased when in good condition, but when returned after a few months he had a large abscess on the right side, was suffering from pediculosis and had lost about 350 pounds in weight. He was nearly 16 years old.

Autopsy Findings

1. Large abscess on right side partly under the scapula. The sixth and seventh ribs under the abscess appeared to have been broken and healed.
2. Cirrhosis of the liver and kidneys. Heart muscle was flabby.
3. Very slight pneumonia.
4. A piece of bailing wire 3½ inches long was embedded in the left lung just above and to the left of the base of the heart. This piece of wire was well encapsulated and there was no evidence of an acute inflammation around it. A fibrous tract led from the reticulum, through the ventral part of the liver, through the diaphragm, and into the lung. Adhesions were present between the reticulum and liver and between the liver and diaphragm and the left lung.

Like the fibrous tract the adhesions present no evidence of acute inflammation.

Conclusion

Senility with a slight degree of toxemia resulting from the abscess on his side were the cause of the bull's death. The piece of wire in the lung had probably been there for a long period. It was completely walled off and causing the bull no trouble. The fibrous tract leading from the reticulum, through the liver and diaphragm and into the lung traces the probable course of the wire.

From this case and similar cases that have been seen the conclusion can be drawn that not all foreign bodies, that pass through the wall of the reticulum cause traumatic pericarditis; since, as in this case, not all of them contact the heart. Also there is evidence to indicate that in some cases little damage may be done to the animal when the foreign object fails to penetrate the pericardial sac. It is possible that many cases diagnosed as simple bovine indigestion are in reality minor cases of traumatic gastritis.

A careful post-mortem examination is a source of great satisfaction in many cases where death occurs more or less unaccountably. It is usually informative and always a valuable check on one's diagnosis.

GEORGE W. SPANGLER

Topeka, Kansas

Ano-Vulvar Laceration in a Mare

June 1, 1945, a sorrel mare was presented to the clinic at Kansas State College with a history of having foaled about 13 months previously. At that time severe lacerations of the rectum and vagina had occurred. No one was present at the foaling but presumably one of the foal's feet had penetrated the roof of the vagina and entered the rectum. The mare was of good breeding and had been an excellent cow pony, but was valueless in her present state because she could not be bred and she made objectionable noises when ridden. Heretofore unsuccessful attempts had been made to remedy the condition.

Upon examination, it was seen that termination of the digestive tract and of genito-urinary organs formed a common opening. There was a vast cavity, or cloaca, formed by the communication between the rectum and vagina, extending anteriorly for a distance of about eight inches. The sphincter muscle of the anus was divided and the septum which formed the floor of the rectum and roof of the vagina was completely destroyed. Healing of the lacerated tissues had taken place but there was considerable thickening of the tissues in the vagina and rectum. The fecal balls fell from the rectum to the floor of the vagina near the ventral commissure of the vulva, from which they fell to the outside. The ventral part of the vulva and the lips were loose and flaccid and sagged ventrally in an abnormal position. Urination was accomplished in an almost normal manner; breeding was impossible.

Since the owner placed considerable value upon the animal, it was decided to try an operation, although its success could not be predicted.

The mare was kept off feed for three days and the operation was begun on the fourth day. She was placed in stocks and the whole perineal area was washed thoroughly with soap and water, and cleansed with alcoholic sublimate. The parts were then swabbed well with tincture of metaphen. Epidural anesthesia was used, and since the mare was a bit nervous, the skin over the area of the first and second coccygeal vertebrae was infiltrated with 1% procaine. To accomplish anesthesia of the hind parts, 12cc of a 1% solution of sterile procaine was injected into the epidural space, and anesthesia was complete in about 10 minutes. The tail was wrapped in an antiseptic bandage.

The tissue along the edges of the vulva was incised first, and the incision was continued to within about one inch of the ventral commissure of the vulva. The thickened tissues were removed and fresh surfaces created. The remainder of the perineal septum was divided to permit access to the rectal and vaginal mucosa. A floor for the rectum was then formed by dissecting the rectal tissue from scar tissue and suturing the rectal mucosa with a Lembert-like suture. The above procedure succeeded in bringing the separated sphincter ani muscles into apposition. The mucosa of the roof of the vagina was dissected free of the proliferated connective tissue and then sutured together with the same type of suture. After this the lips of the vulva were approximated and sutured with a combination of metal clips, catgut, and umbilical tape leaving an opening at the ventral commissure of the vulva large enough to permit urination. The parts were then cleansed and swabbed with tincture of metaphen, and the sutured lips of the vulva were covered with flexible collodion. The operation succeeded in separating the rectal and vaginal cavities and in bringing the vulva into a normal position.

After treatment consisted in close observation, and the feeding of a small amount of green feed at first and gradually increasing the ration.

This operation did not prove successful for a number of reasons. The fecal balls were hard in spite of the more or less green, laxative feed. They filled the rectum which in itself was considerably swollen. The straining, pressure of the feces, the swelling in the rectum and the inability of the mare to defecate spontaneously caused the sutures to tear out in a few days, leaving the cavity as before.

Fourteen days later a second operation was attempted with same procedure. After care in this operation consisted in removing the feces by hand at fairly regular intervals, and the mare was given regular exercise. Green feed was fed as before. This operation proved unsuccessful also, and the mare was left in the same condition as before.

The operation was attempted a third time about 16 days later, but this one too was unsuccessful.

It was thought that the flies were bothering her some and there was some fear of screw-worms if the operation were to be tried again, so the owner was instructed to take her home and bring her back in the fall after the fly season was over.

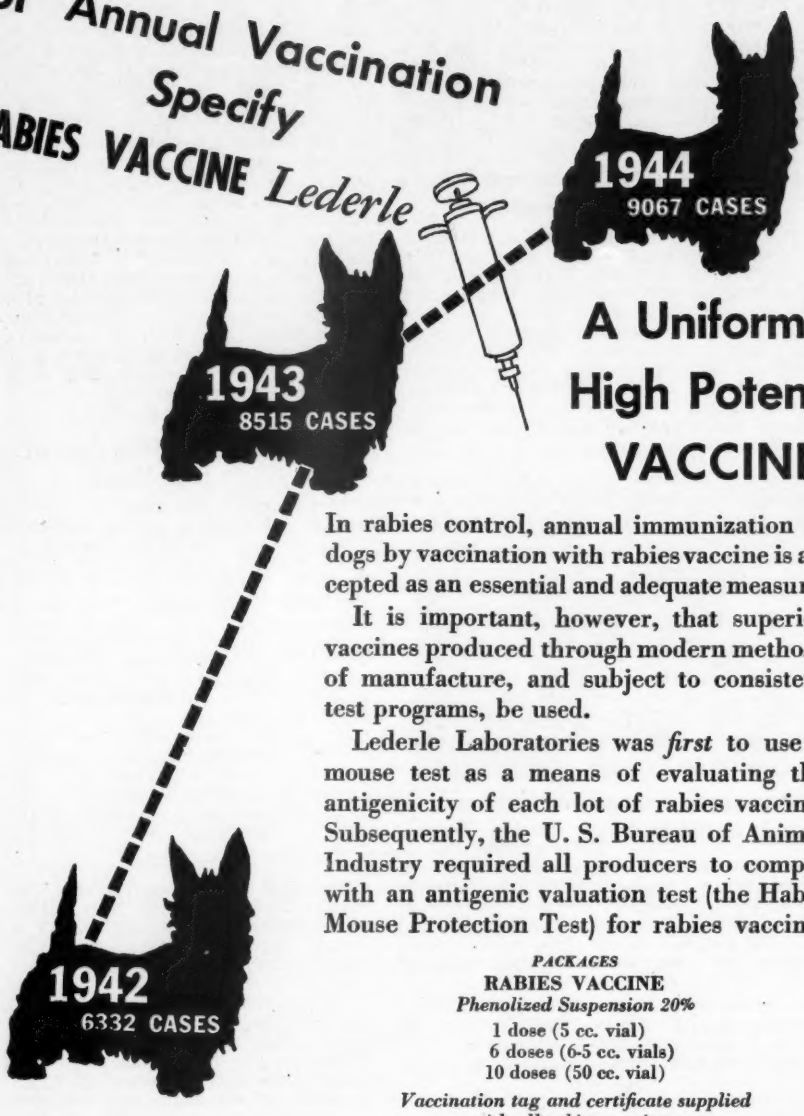
The operation was tried again in the fall, but with negative results as before.

Although success was not attained in this patient this operation does sometimes succeed.

L. J. RUNNELS

Wichita, Kan.

For Annual Vaccination Specify RABIES VACCINE *Lederle*



A Uniformly High Potency VACCINE

In rabies control, annual immunization of dogs by vaccination with rabies vaccine is accepted as an essential and adequate measure.

It is important, however, that superior vaccines produced through modern methods of manufacture, and subject to consistent test programs, be used.

Lederle Laboratories was *first* to use a mouse test as a means of evaluating the antigenicity of each lot of rabies vaccine. Subsequently, the U. S. Bureau of Animal Industry required all producers to comply with an antigenic valuation test (the Habel Mouse Protection Test) for rabies vaccine.

PACKAGES
RABIES VACCINE
Phenolized Suspension 20%
1 dose (5 cc. vial)
6 doses (6-5 cc. vials)
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Vaccination tag and certificate supplied with all rabies vaccine.

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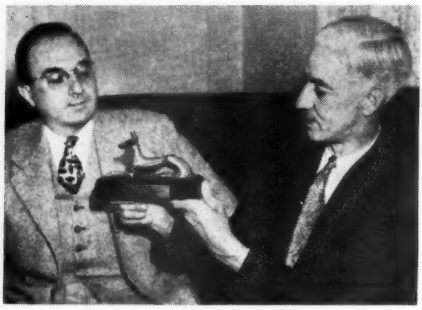
You'll Be Interested to Know That . . .

As of July 1, 1946, all functions of the U. S. Department of the Interior and its Fish and Wildlife Service having to do with breeding, raising, producing or marketing of domestically-raised fur-bearing animals were transferred to the U. S. Department of Agriculture.

■

Veterinary Student Receives Albert Sidney Johnson Saber

Chester J. Reed, a senior in the School of Veterinary Medicine, A. & M. College of Texas and commander of Troop B of the R.O.T.C. cavalry unit at the institution was the recipient of this year's award to the outstanding cadet in the college. The award, a sterling silver saber, is presented by the Texas Division of the United Daughters of the Confederacy in honor of Albert Sidney Johnson, Col. U.S.A., Brig. Gen. and Sec. of War, Republic of Texas and General of the Confederate States.



DOGDOM TO HAVE ITS OWN "FIDOS"

Not to be outdone by Hollywood and its "Oscars," America's dogdom is to have its own "Fido" awards for individuals of outstanding accomplishment in the dog field. Here we see Harry Miller (left), executive secretary of the Gaines Dog Research Center, New York, originators of the award, and Arthur J. Ritchotte, wood sculptor of New Haven, Conn., who executed the trophy, inspecting the first finished model of "Fido."

The first two "Fidos" will go to Laurence A. Horswell, Elmhurst, N. Y., and Mrs. Milton Erlanger, Elberon, N. J., voted respectively "Dogdom's Man and Woman of 1945" by America's dog editors and writers.

■

Goshen Laboratories, Inc., in a series of attractive advertisements, currently appearing in leading dog magazines, is endeavoring to teach dog owners the importance of employing skilled veterinary services for ailing animals and the folly, often cruelty and sometimes disaster, of relying upon lay treatment or advice in matters affecting the health of pets. Beside illustrations of dogs of various breeds, attention catching headlines are used. Samples: Killed by unreasoning fear; killed by a look; killed because he needed help; killed because he had fleas; died because he couldn't talk; a case of mistaken identity fatal.

Mr. Rolly M. Cain has been elected president of Abbott Laboratories. He was formerly executive vice president of the company.

■

Mr. J. L. Rogers, Director of Medical Service for Pitman-Moore Company, was elected president of the American Pharmaceutical Manufacturers Association at the annual meeting at Lake Louise, Alberta, Canada, June 10 to 12. The new president announces the inauguration of an expansion of the Association's activities. It will continue its policy of making an annual award to a world scientist selected in recognition of his outstanding contribution to medical progress and in addition will establish scholarships in pharmacy at one or more colleges and make annual awards for outstanding achievement in the pharmaceutical field.

■

Borden Acquires Armstrong Dog Food

The Borden Company has acquired the business and assets of the Armstrong Food Company, Inc., manufacturers of pet foods, with offices at Sherburne, N. Y., and plant at Danville, Ill., according to C. F. Kieser, vice president of Borden's special products division.

The acquisition follows Borden's policy of diversifying its activities. Borden has long supplied vitamin A and other feed supplements for poultry, dairy cattle and other livestock and dogs.

W. E. Armstrong will remain as president of the new Borden subsidiary. Before founding the Armstrong Company in 1944, he was vice president of Chappel Brothers, Inc., Rockford, Ill., and later president of the Gaines Food Company, Inc., New York City.

■

Doctor H. L. Wilcke, formerly Head of the Poultry Husbandry Department at Iowa State College, became associated with the Ralston Purina Company as Manager of the General Poultry and Hatchery Department, July 8, 1946.

Doctor Wilcke received his B.S. Degree in Poultry Husbandry from Iowa State in 1927, M.S. in Poultry Nutrition in 1932, and Ph.D. in Poultry Nutrition in 1935. In 1932, he was made Assistant Professor of Poultry Husbandry at Iowa State and was promoted to Associate Professor in 1935. In 1936, he became Professor and Head of the Poultry Husbandry Department.

Doctor Wilcke served in the Army from March, 1943 to March, 1946; spending eighteen months overseas. As Nutrition Officer, he directed a nutrition team in making surveys of the food consumption and nutrition status of the civilians in Germany and Austria and was an American representative in the Four-Power Conferences setting up the issue for Vienna. He taught Poultry Husbandry and Turkey Management at the American University in Biarritz, France for part of two terms.